QK1
.M593
1988
v.76
c.2

Missouri Botanical Garden Bulletin

JANUARY–
FEBRUARY
1988

VOLUME LXXVI
NUMBER ONE

SHOUT
SHARE
IT

Inside This Issue

3 **Designing the New Temperate House**
The present Mediterranean House will soon be replaced with a much larger and more useful Temperate House as part of the Campaign for the Garden.

6 **Gardening at the Garden**
Do plant names cause you to scratch your head in confusion? If so, this article will decode the method in the madness.

8 **Ask the Answer Service**
There are several new plant varieties and tools with which to cultivate them available for 1988.

10 **The Flora of North America**
The Garden has embarked upon a most ambitious project, to publish a book listing all of the plants found on this continent.

12 **Calendar of Events**
Start the new year off right with a visit to the Garden for one of the many exciting events planned during January and February.

18 **For Younger Members**
Give that special someone a gift of Nature's Valentine this February.

21 **Tributes**
Friends and family honored with a contribution to the Garden.

On the cover: On a cold, wintry day in St. Louis, few things are as pleasant as a trip to the Garden to smell and view the camellias in the Linnean House, the oldest continuously operating greenhouse in the United States.

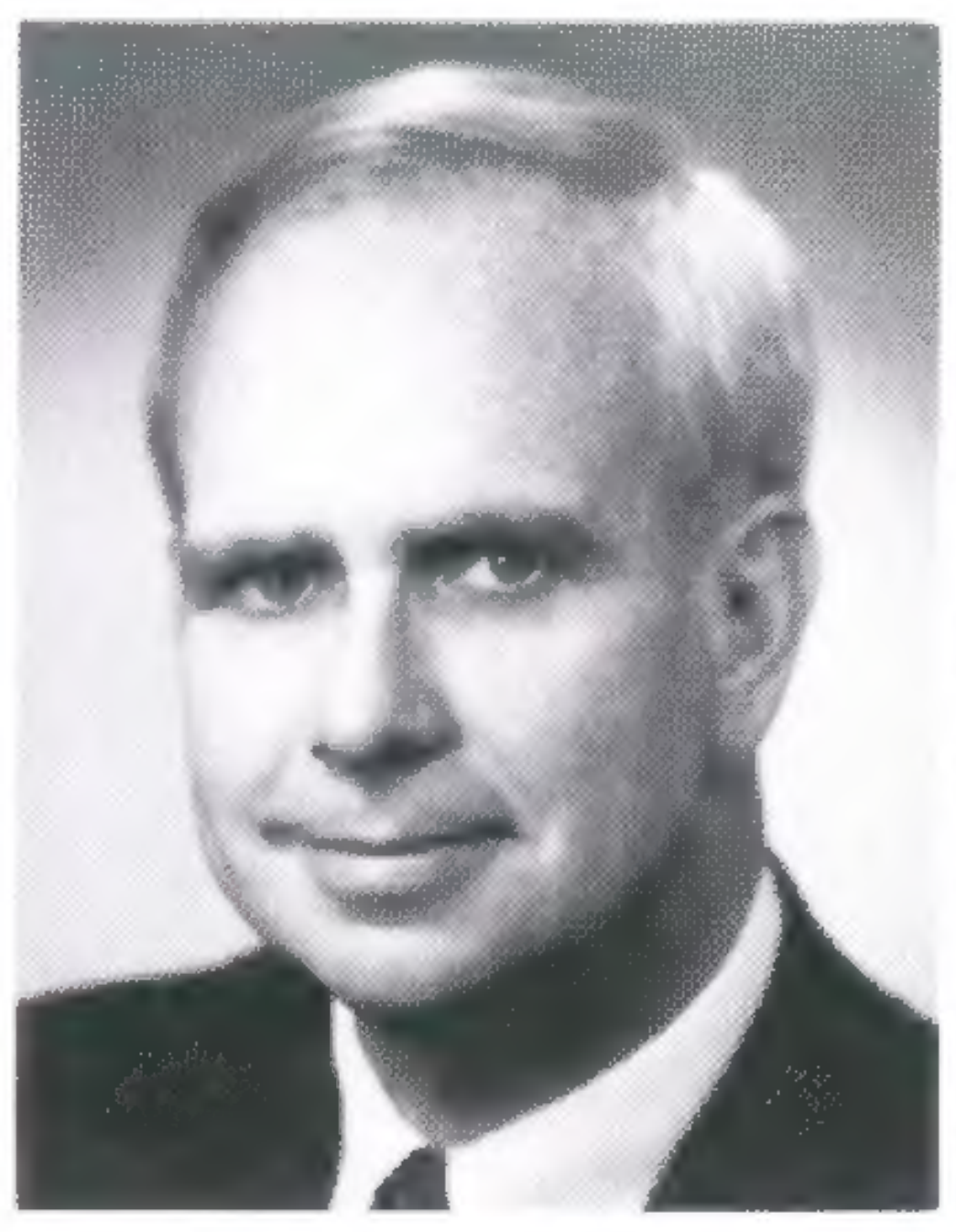
The BULLETIN (ISSN 0026-6507) is published bi-monthly by the Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, MO 63110. Second class postage paid at St. Louis, MO. Subscription price $12.00 per year. $15.00 foreign.

The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $35 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Lee B. Fox, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

The New Year



We are now moving into the second year of our capital campaign and are pleased with the results thus far. I want to extend congratulations to the Board of Trustees who jointly have provided the most valuable resource, that of leadership, and have donated generously to the campaign.

The Garden membership has proven again to be a splendid asset to the campaign. It is because of Members' support and support from businesses and foundations that the Garden exceeded its internal goal, and started the new year over the $10 million mark.

Beginning in 1988, we will witness the completion of our three new greenhouse ranges increasing our growing space by 30 percent, the restoration of the Climatron both inside and out, and the construction of the Temperate House and Interpretive Center as part of the Climatron complex.

And, a first ever for the Garden, the "Fragrance Festival: A Celebration of Scent," will open the week before Mother's Day, featuring fragrance-related activities for a full week and creating a special annual event that will bring more St. Louis residents to the Garden each spring.

The arrival of the seven magnificent Milles sculptures to be placed in the beautifully renovated lily pools between the Climatron and Flora Gate will highlight our activities this spring. With our new state-of-the-art greenhouse ranges in full operation during 1988, almost all of the traditional flower shows will be back on schedule.

It is, as always, the unending and wonderful support of Garden Members and the entire St. Louis community that allows us to make each year better than the last.

Peter H. Raven

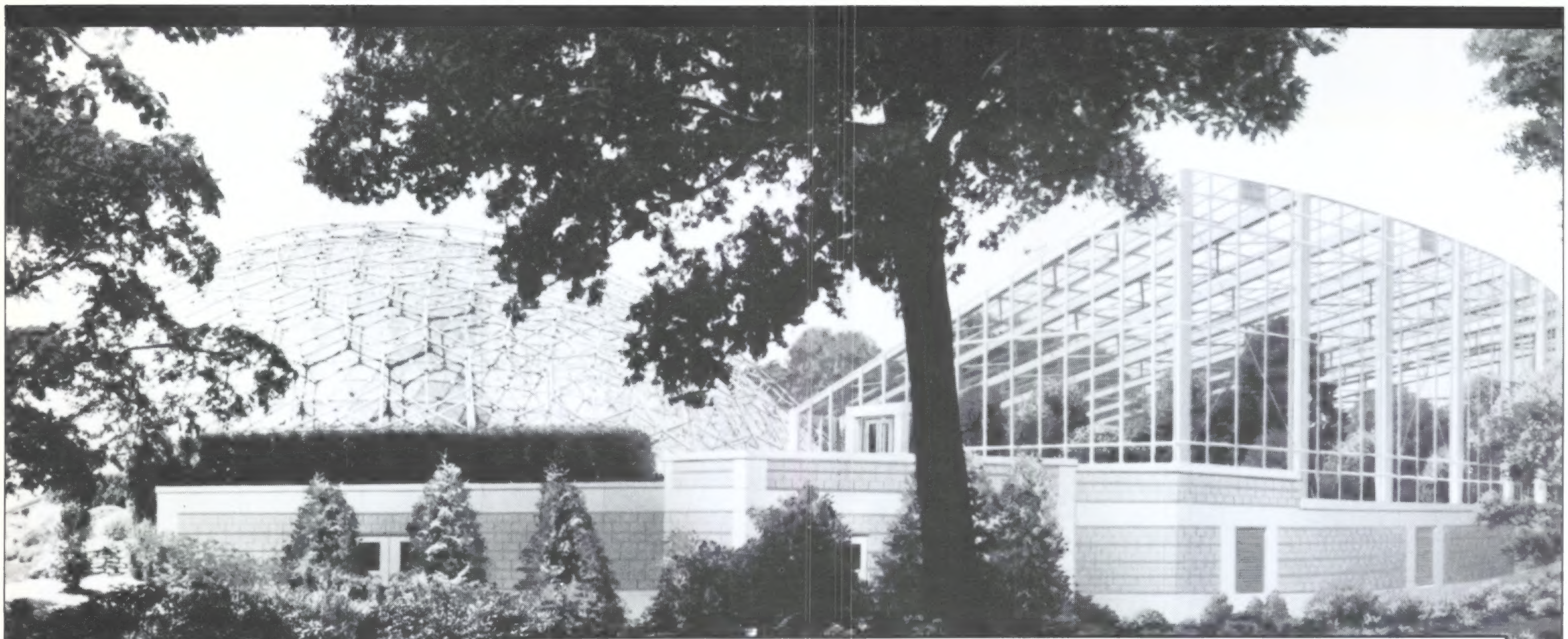
Campaign Tops $10 Million

The Garden's $16 million capital fund drive topped the $10 million mark with a $75,000 grant from the Stanley Smith Horticultural Trust and a $140,000 anonymous gift from a local donor. The Trust funds have been earmarked for the Center for Home Gardening.

The Stanley Smith Horticultural Trust is one of the most respected charitable foundations dedicated to horticulture in the world. Its trustees maintain offices in Scotland, England, Hong Kong, Canada and the United States.

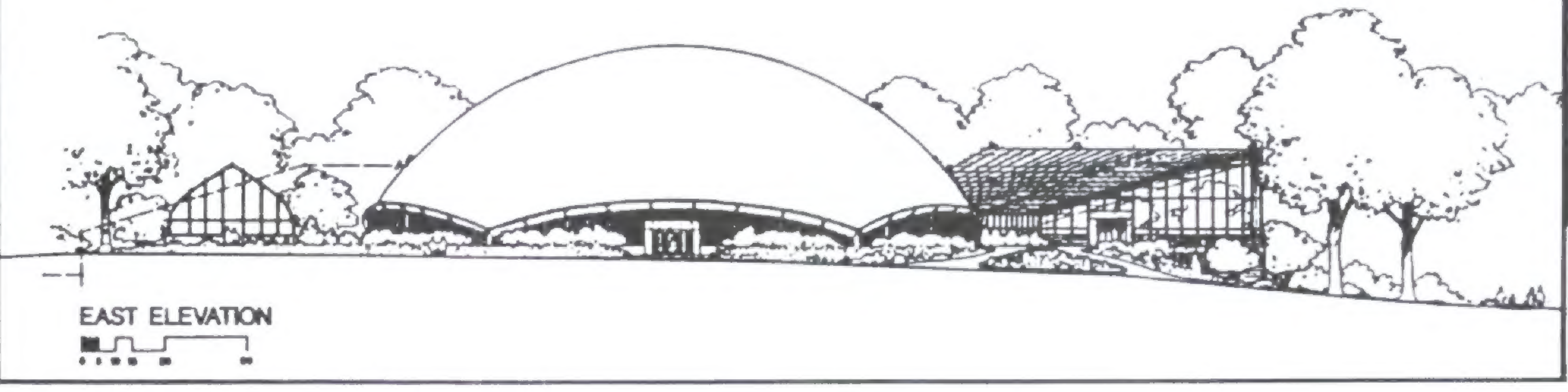
CENTRAL AMERIC
SOUTH AMERICA
Tropics:
AFRICA

TRUSTEE HONORED: Garden Trustee Emeritus Henry Hitchcock, center, observed his fortieth year as a member of the Board of Trustees in October and received an engraved silver tray from President John H. Biggs, left, and Director Peter H. Raven. Mr. Hitchcock's tenure on the board is only succeeded by that of his father, George C. Hitchcock, who served for 44 years. A Hitchcock has served on the Board of Trustees continuously since the board was created in 1889. Mr. Hitchcock's grandfather, Henry, was one of the original 12 trustees designated by Garden founder, Henry Shaw, in his will.



Top: An artist's rendering of the new Temperate House, seen from the Ridgway Center.

The existing Desert House and Climatron, with the new Temperate House, seen from the Waterlily Pools.



THE CAMPAIGN FOR THE GARDEN

Designing the Temperate House, Interpretive Center and Desert House

BY BRYCE E. COOPER

Staff Writer
The Christner Partnership, Inc.

If you're a Member of the Garden, as I am, most likely you are aware of changes planned for the Climatron and its companion greenhouses, the Desert House and the Mediterranean House. Geoffrey Rausch, of the Pittsburgh firm Environmental Planning and Design, heads the team of consultants for the Climatron renovation, and gave you a "tour" in your September/October *Bulletin*. Eileen Zalisk of the Boston firm Krent/Paffett Associates, Inc., introduced you, in your November/December *Bulletin*, to the displays being created for the Climatron and the new Interpretive Center.

The original greenhouses were constructed in 1913, 47 years before the Climatron was erected on the site of the old Palm House, whose portico was retained in the Climatron. These greenhouses have introduced millions of people to plants that require protection from St. Louis' frigid winters.

However, time has taken its toll, and both greenhouses need to be replaced. The deteriorating Mediterranean House will be replaced by a new Temperate House, which will be about twice as large. This modern display greenhouse will be connected to a new centralized mechanical system in the Climatron being designed by engineers at Ross and Barazzuni, Inc. A new Desert House will eventually replace the old one, and the Interpretive Center will stand at the rear of the complex.

Let me tell you about the behind-the-scenes evolution of these exciting new buildings. I'm a colleague of the architects at The Christner Partnership, the St. Louis firm designing the Interpretive Center and the Temperate House. The firm was also a major contributor to the Master Plan for the new Climatron complex.

I watched the designs take shape from the day the architects came back from their first meeting with the other consultants. The context for the new designs was presented by Director Peter Raven, who emphasized that the Garden, above all, is a place of beauty which also teaches the public about plants and provides scientists with a living laboratory.

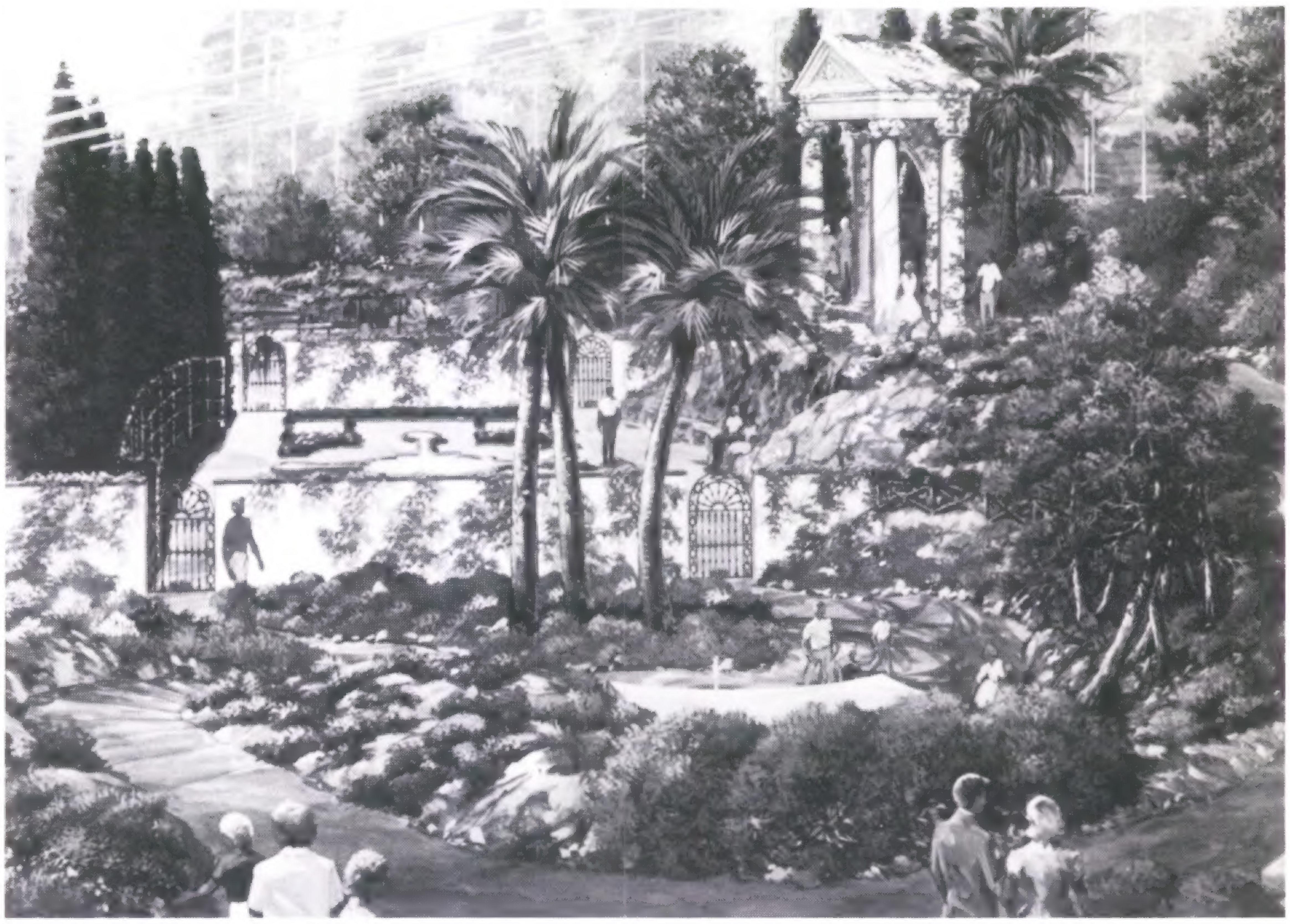
The design for the new greenhouses began with a symmetrical concept based on the lines radiating from the center of the Climatron. This concept was compatible with the Climatron's position at the heart of the Garden. The dome is also at the west terminus of the original entry axis to the Garden, created by the Flora Gate and intervening lily ponds. The historic significance of the entry axis warranted a sympathetic response from the new design.

The classical geometry of the entry axis and the dome's circle suggested a formal design for the new greenhouses.

continued on next page

NEW TEMPERATE HOUSE

continued



An artist's rendering of the interior of the new Temperate House, described in detail on page 5.

However, the three new buildings have different requirements, and the landscape around the complex also imposed other restrictions. The plan was developed in such a way that the design for each structure considers:

- the purpose of the new structure
- adjacent uses
- angles of the sun
- site vistas from both the inside and the outside
- building program requirements

Architecture is a surprisingly verbal process: all design details are discussed, debated, reconsidered, and viewed from all angles, so to speak. A computer graphics system designed by McDonnell Douglas Corporation provided a tool for creating a series of design solutions responding to the above considerations.

The Temperate House design began with a peaked roof, reminiscent of the Mediterranean House. During the design process, the peak shifted to become the outer edge of the building. In contrast, the reversed slope of the Desert House gestures toward the south of the Garden without concealing the Climatron from visitors approaching it. This orientation also allows the sun to penetrate at the proper angle. The final design's asymmetrical effect supports the beautiful curve of the dome, yet also achieves an independent status for both new greenhouses.

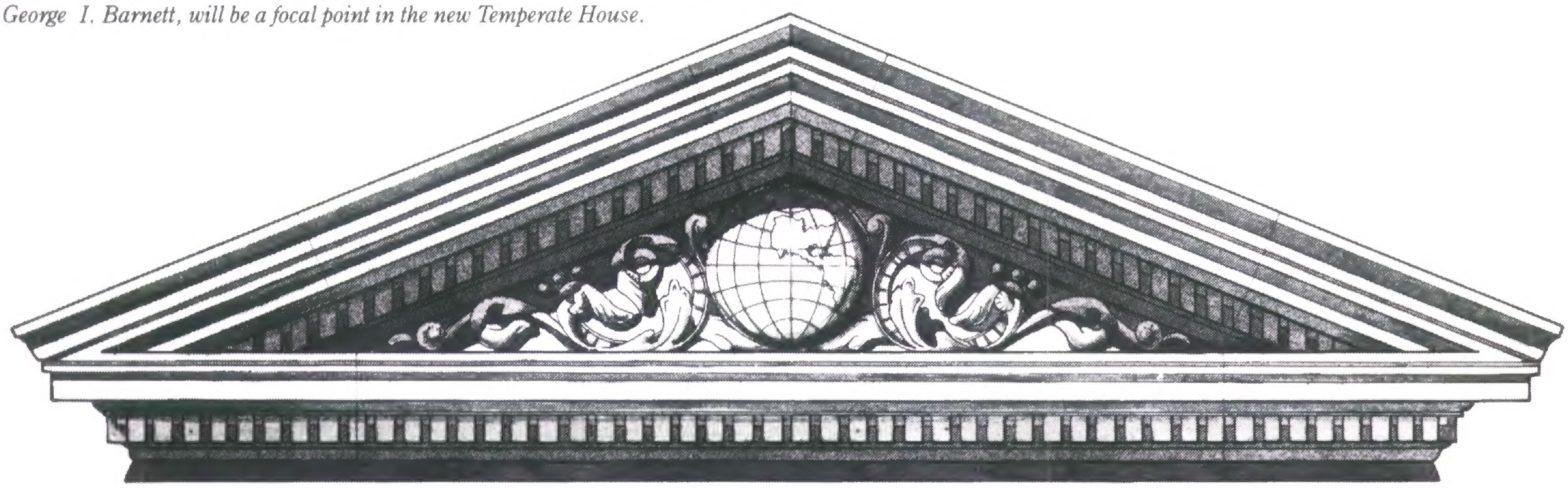
The new greenhouses will flank the Climatron in two curving shapes with sloping roofs. Like greenhouses of the past, their steel structure has become more than just a structural element of the physical building. The radiating pattern of custom tube trusses emphasizes the centrality of the Climatron. Other structural elements, such as the tracery of the double columns, contribute understated embellishment to the greenhouses while maintaining their background role relative to plant displays.

The Temperate House faces northwest, and takes advantage of its orientation toward the sun with a high outer wall of glass. This special single-pane glass is coated with a low-emissivity invisible coating that bounces summer heat off of the building and retains winter heat. Heating will be provided by hot water radiation, and cooling by a fogging system. Vertical glass will have vents that are mechanically operated by the complex's new central computer system. The computer can back this up with the fogging system. The height of the Temperate House will accommodate sizable trees such as the Australian gum tree (*Eucalyptus erythrocorys*).

The Interpretive Center will be constructed at the rear of the dome. It will have double doors leading into the Climatron, the Desert House and the Temperate House and will contain displays and visitor amenities. It will be an understated, low, windowless structure of naturally colored masonry units and accenting brick coursing.

continued on page 16

This antique limestone pediment, designed by Tower Grove House architect George I. Barnett, will be a focal point in the new Temperate House.



The
CAMPAIGN
for the Garden

UPDATE: The New Temperate House Gardens

As of December 1, 1987, the $16 million Campaign for the Garden had raised $10,138,725 in gifts and pledges. We thank those donors whose generosity helped us reach this point in our fundraising progress.

• • • • •

At present, to the north of the Climatron stands the Mediterranean House, dating from 1913. It displays temperate-zone plants from around the world, species which must be grown indoors because of their inability to survive Midwestern winters. The Mediterranean House is now quite antiquated and must be replaced. Through the Campaign for the Garden, the new Temperate House will be built on that site, at a cost of $3.38 million.

The new Temperate House was designed by The Christner Partnership, Inc., a St. Louis architectural firm. It was a challenging assignment to design a display house that would not only reinforce and respect the Climatron's powerful architectural vitality, but would also be an attractive and highly functional building in its own right. The end result is an excellent response to this challenge. The preceding article describes the building and relates many of the complex factors that had to be considered in their design work. The Temperate House's new interior display gardens are described below.

The Temperate House will approximately double the display space currently available in the Mediterranean House. Alan Godlewski, the Garden's director of horticulture, notes that, "This allows us to expand dramatically the numbers and types of plants we can exhibit. We'll be able to bring in some of the truly fascinating, diverse, and beautiful temperate species from many other parts of the warm temperate world in addition to the Mediterranean Basin, such as Africa, Australia, South America, China, Korea, Japan, coastal California, and the southeastern United States."

The Temperate House will contain seven garden areas successively arranged along one winding, multi-leveled pathway. Briefly, the new displays are:

Riparian Gardens: Three areas representing distinct geographic regions will display plants of moist, warm temperate areas often associated with streams and other smaller waterways. These areas in nature are often oases set in normally dry, rocky hillside landscapes. Visitors will have the opportunity to see exotics unique to certain habitats, as well as plant family diversity and links across continents.

Rustic Arbor: Vine arbors and pergolas are common components of hillside terrace scenes in Mediterranean countries, providing decoration and shade. This structure, of rough-hewn timbers, will allow visitors to pass beneath tender flowering vines from several temperate regions.

Moorish Garden: This formal garden will feature rotating displays of colorful, primarily Mediterranean annuals surrounding a traditionally styled fountain. Inspired by the Court of the Lions, a spectacular historic Moorish pleasure garden in Alhambra, Spain, its other classical features will include citrus and cypress trees, wrought iron gates, wall-climbing and trellised vines, and mosaic-patterned pavement.

Overlook: The Overlook will be situated on the highest point in the Temperate House. It will be naturalistically planted in cliffside plants and will give a stunning view of the Moorish Garden. The Overlook contains an antique portico, featuring an Italianate limestone pediment pictured on page 4.

Biblical Garden: Recalling the oases of the dry Mediterranean regions, this area will profile such historically and economically prominent plants as date palms, figs, and carob. It will include a tentlike viewing structure sheltered by a rocky wall, and its central focus will be a small well.

Wildflower Terraces: In some hilly temperate areas, the landscape is primarily arid and can often support only small shrubs, tall grasses, and seasonal wildflowers. These rocky terraces will blaze with primarily spring-flowering plants from California, Australia, and the Mediterranean.

Rock Garden: This area and its special supplemental lighting system will bring out abundant seasonal masses of the many interesting colorful bulb plants and flowering shrubs of Australia, southern Africa, the Mediterranean Basin, and the Orient.

Centerre Pledges $150,000 to Center for Home Gardening

Centerre Bancorporation and Centerre Trust Company have made a joint pledge of $150,000 to the Garden for the development of the Center for Home Gardening Pavilion.

During the 1990s, the 8.5-acre center will be built on the Garden grounds and will feature more than 20 residentially scaled display gardens. Centerre's pledge is earmarked for the construction of a demonstration kitchen in the pavilion, which will be the first phase of the entire project, to be constructed in 1990-91.

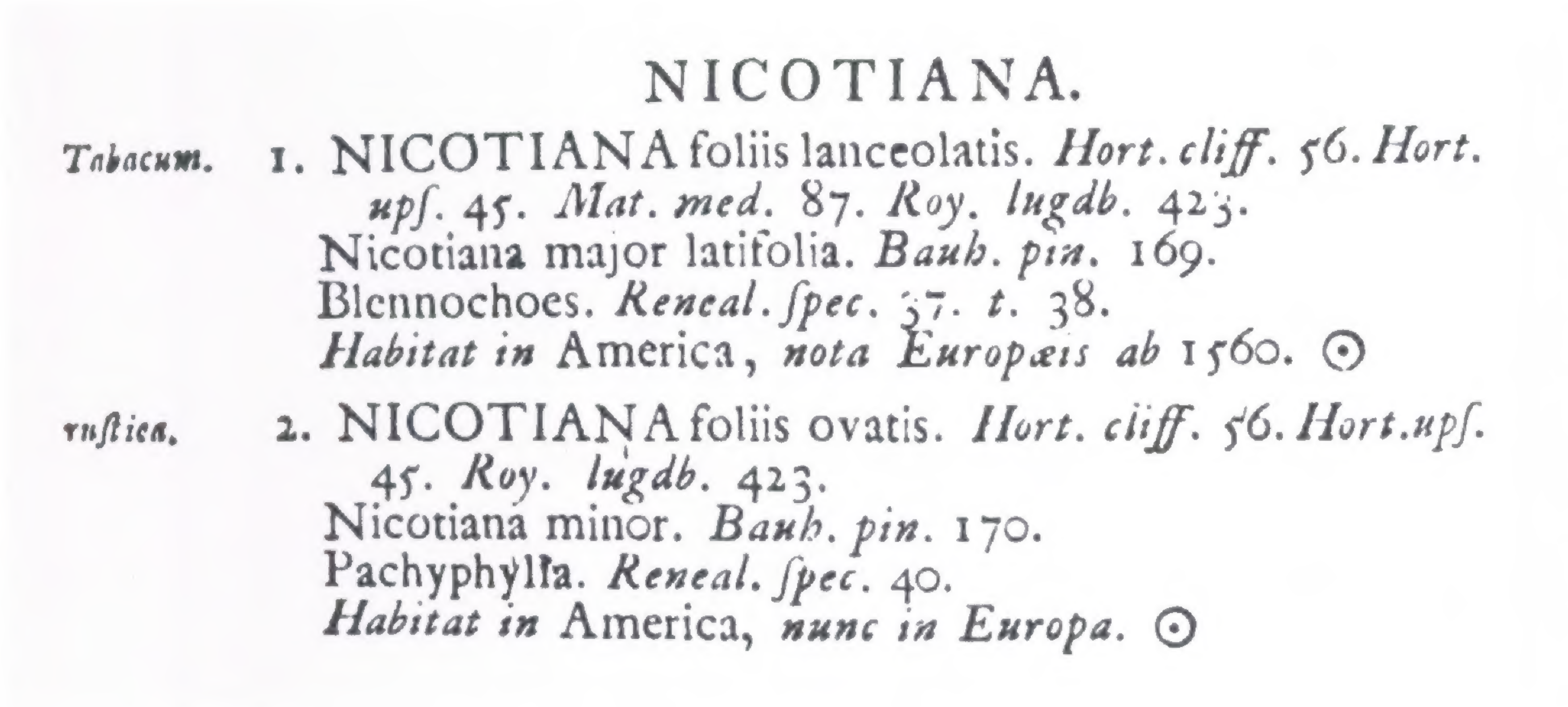
"The new Center for Home Gardening is another example of how the Missouri Botanical Garden enhances the St. Louis community," said Clarence C. Barksdale, chairman and chief executive officer of Centerre Bancorporation. "We are proud to offer our support."

John H. Biggs, president and chief executive officer of Centerre Trust Company, and president of the Garden's board of trustees said, "The demonstration kitchen is, to us, as bankers, an especially appealing feature because of its practical application to everyday life. We believe it will allow the Garden to expand significantly its innovative educational programs."

The pavilion will serve as the visitors' entrance to the Center for Home Gardening, a horticultural reference library and an educational facility. It is scheduled for completion in 1991.

Gardening at the Garden

What's in a Name?



NICOTIANA.

Tabacum. 1. NICOTIANA foliis lanceolatis. *Hort. cliff.* 56. *Hort. upſ.* 45. *Mat. med.* 87. *Roy. lugdb.* 423.
Nicotiana major latifolia. *Bauh. pin.* 169.
Blennochoes. *Reneal. ſpec.* 37. *t.* 38.
Habitat in America, *nota Europæis ab* 1560. ⊙

ruſtica. 2. NICOTIANA foliis ovatis. *Hort. cliff.* 56. *Hort. upſ.* 45. *Roy. lugdb.* 423.
Nicotiana minor. *Bauh. pin.* 170.
Pachyphyl̃a. *Reneal. ſpec.* 40.
Habitat in America, *nunc in Europa.* ⊙

Part of a page from Linnaeus's *Species Plantarum* showing entries for two species, which would be their first official appearances in the literature. The first entry is made up of the epithet "Tabacum," the phrase name for the same species, four references to it in earlier works, two synonyms accompanied by literature references, and geographical information. The circled dot represents the sun and gold; Linnaeus used it to indicate annuals.

CONTRARY to common grumbles, botanists do not change the names of plants in a spirit of intellectual vandalism. Yes, names do wobble disturbingly, but the problem is with the plants, not with their students.

The chief trouble is that there are roughly 250,000 species, not to mention subgroups within species. I wonder how many species there are per botanist... it is awesome to ponder. Whatever that number may be, it would not tell the whole troublesome story, since it would involve the complacent acceptance of species as well-defined units. Unfortunately, even defining species can be tough.

Any given species might be distributed over a vast and largely inaccessible area, and it may vary across its range, sometimes in cryptic ways (for example, cold hardiness) and sometimes in ways that depend more on the environment than on ancestry. It might hybridize with other species (or are these just variants of the species in question?). The species may split up into asexual clones, each a little different from the others—such clones have often been named misleadingly as separate species. The classification of hawthorns, as a case in point, has suffered from this.

Traditional definitions of species are generally concerned with the ability to cross: horses breed with other horses, and donkeys do likewise with other donkeys, but crossing horses and donkeys does not work, so they must be different species. One of the main problems with this is that there are degrees of interbreeding. Even the results of this familiar example are inconclusive. The cross does yield an offspring, a mule, which, however, is sterile and cannot blur the line between its two parental species further.

To dream up a hypothetical but realistic example from the plant world, consider two different-looking orchids in Brazil that never cross in the wild because they have different flowering times, habitats, and pollinators. Yet, if the pollen is plucked from one and forced into the other by an experimenter, perhaps a few viable seeds form that germinate into seedlings able to survive pampered in the greenhouse but not in nature. Do the two parents represent two different species? Even if such artificial crosses were adopted as *the* test, remember those 250,000 species out there to be tested. In practice, most species are recognized by comparison of sets of pressed, dried specimens. There are 3.5 million such specimens at the Missouri Botanical Garden.

Even using pressed specimens, species can be nebulous. They do not always have the crisp, clear borders that we might like. And as the song goes, "how do you catch a cloud and pin it down?" Part of the answer involves a device known as the type specimen. This is one specimen chosen when a species is named to serve as its fixed reference point. In-depth discussion of types lies beyond this friendly introduction. However, as an illustration of how types are useful, consider one example. Suppose that after studying 500 specimens of species "A" we conclude that we are really confronted with two species, one of them previously undescribed. Which of the two species in front of us should still be called species "A," and which should receive a new name?

Easy, the species to which we assign the type specimen of species "A" retains its name, even if the other species accounts for 495 of our 500 specimens.

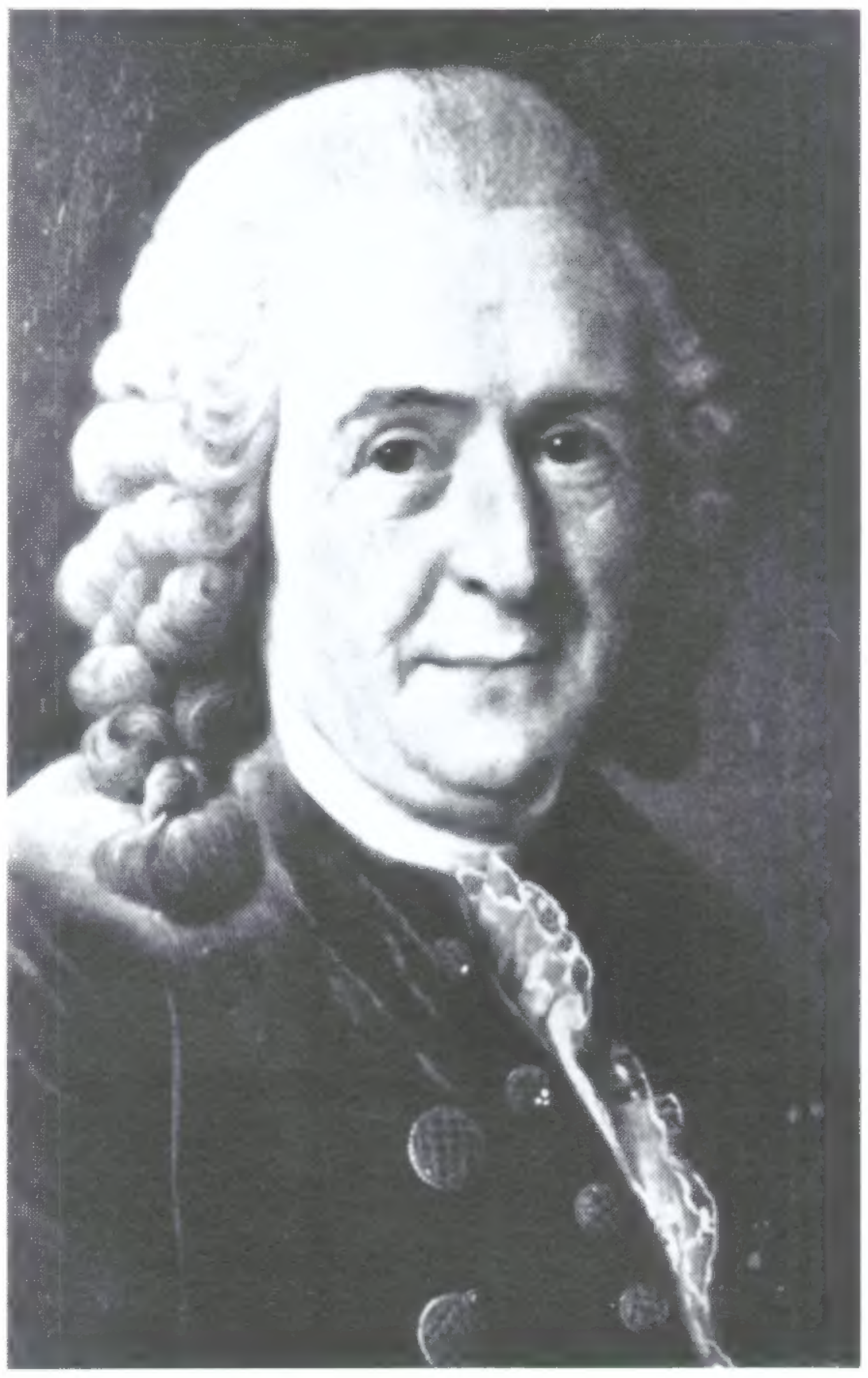
Our newly discovered species must be named. But beware, people have been naming species for a long time, so it could be that long ago someone else already supplied a different name to the species that we think is new. This is common: some species accumulate long strings of such synonyms. Subject to exceptions, if an older name turns up down the road, the name we selected must be displaced. A second hazard is that in some catacomb there lurks a dusty tome containing the name we chose already applied to a different species. Should the dark secret ever come to light, our use of the name must be thrown out.

If you are a heckler at heart, reading the preceding paragraph you may have experienced the urge to mumble, "OK then, if the oldest name for a plant must be adopted, what did they call *Acer platanoides* in the Stone Age?" Searching back through old records to avoid the problems mentioned above is a big aspect of botanical work, but it is not carried to the ridiculous.

This is where the "father of plant taxonomy" enters the picture. In 1753, the Swedish naturalist Carl Linnaeus published his *Species Plantarum*, which has become the official starting point for plant nomenclature. Linnaeus is often credited with inventing the modern two-part plant name, such as *Quercus alba*, which he did not do. Such names were in use well before Linnaeus.

What he did was thoroughly survey the known plant world, compiling, gathering the various names applied to species, listing literature references, and recording other data. Linnaeus's contribution thus is a tremendous synthesis, and yes, he did use two-part plant names, applying them consistently throughout his work. The second portion of the name (the specific epithet) appears in the margin.

In the snippet from the *Species Plantarum* accompanying this article, the "Tabacum" in the upper left corner is the specific epithet for tobacco, *Nicotiana tabacum*. He also supplied longer, descriptive phrase names to each species, in this case, *Nicotiana foliis lanceolatis*.



Carl Linnaeus (1707-1778)

Returning to the matter of naming our species and the hazards involved, to avoid nomenclatural troubles later, the chosen name must be of an acceptable form, spelled according to standardized conventions, presented to the world properly, and accompanied by a Latin description. The last requirement allows botanists who speak languages other than that of the person describing the species to comprehend its distinguishing characteristics.

How plant names are governed does not make scintillating reading. Suffice it to say that a document known as the *International Code of Botanical Nomenclature* guides new and changed names and specifies that existing names be standardized to some extent. Thus, although it is annoying to find *Impatiens wallerana* and *Impatiens walleriana* or *Euonymus alatus* and *Euonymus alata* in different handbooks, the rules of nomenclature settle the matter by making it clear that the latter spellings are the ones to use.

So far most of the discussion has focused on species; however, species occupy just one step in a hierarchy of categories. They can be subdivided into subspecies and/or varieties and/or forms. Note that varieties are formal categories not to be confused with casual applications of the term or with so-called "cultivated varieties," which are cultivars and are very different.

Looking in the opposite direction, related species are grouped into genera (singular: genus). The species of oaks (red oak, white oak, and so forth) together make up the genus *Quercus*. Genera are grouped into families, which have names ending in -aceae (a few families have alternative names that do not end this way). The bean family is the Fabaceae, or to use the alternative name, the Leguminosae. From families we climb through increasingly inclusive categories: orders, classes, and divisions.

A common source of confusion, cultivars are the works of man and woman and thus stand a world apart from all the other categories under consideration, which are the works of evolution.

Cultivars have their own code of nomenclature, and their names are readily recognized. They follow the name of a genus, species, or subunit of a species and are capitalized and enclosed in single quotes. They differ further in not being set in italic type and by usually not being Latin. In *Camellia japonica* 'Polar Bear', *Camellia japonica* is the species name, and 'Polar Bear' is the cultivar.

With this extra background, we can return to the theme of changes in plant names. While many changes are beyond argument, such as an older properly published name turning up, other changes are open to interpretation, particularly those connected with differences in opinion on the position of a group in the hierarchy. Is it a species, or should it be a subspecies? To which genus does it belong? Such questions are especially troublesome for persons concerned with the plants involved but not set up to study all the related research.

For an imaginary case study, suppose that a botanist concludes from diligent research that the genus of apples (*Malus*) should be merged with the genus of oranges (*Citrus*). The resulting single, broadened genus would be called *Citrus*, this being the older name, and the name of the common apple would have to be changed from *Malus pumila* to *Citrus pumila*, barring some unlikely contingencies. But this change would be required only if you are convinced that apples and oranges belong to the same genus. Here is one mechanism by which multiple names for a given species come into use, and it might be better to regard such cases as differences in interpretation rather than "those botanists changing names again."

A real example is one of the familiar wildflowers known as false Solomon's-seal. The species is commonly called *Smilacina stellata*; however, a researcher not long ago combined the genera *Smilacina* and *Maianthemum* to yield the handle *Maianthemum stellatum* for false Solomon's-seal, *Maianthemum* being the older generic name.

Students of plant classification do not look for older names and combine genera to befuddle the rest of the world. Rather, there is a great deal to learn, even about species in nearby woods and gardens, not to mention about evolution, geological history, ecology and other broad areas that bear upon classification.

Science moves forward slowly with most name changes resulting from broadening perspectives, increasingly refined techniques, accumulating data, and improved understanding. Sticking tightly to names, that from our standpoint in time and space seem to be established, is false security. In terms of reflecting relationships and of achieving a meaningful, unambiguous system, the names we know often turn out to be just plain wrong. Wouldn't it be a pity to stop changing them? *—George Rogers, Ph.D.*

Botanical names are not changed to befuddle us; sometimes they turn out to be just plain wrong.

Ask the Answer Service What's New for '88

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at ***577-5143.***

Winter has blanketed herself about us, but no self-respecting gardener has allowed his or her mind to stray too far from summery thoughts. Of course, the arrival of the new seed and nursery catalogs helps. Let's touch on a few of the interesting items we can look forward to in 1988.

ALL-AMERICANS

All-American selections, as always, head the list. In a new Bedding Plant Flower category is a hybrid Petunia 'Ultra Crimson Star.' Displaying large blooms in a crimson and white star pattern, this petunia performed equally well in both garden and greenhouse and shows late season disease tolerance.

Other All American winners include *Celosia* 'New Look' which is the first dwarf, bronze-leaved plumosa celosia. Shasta Daisy F, Hybrid 'Snow Lady', is a tender perennial that blooms as early as an annual, bearing large flowers on a 10-inch by 12-inch dwarf plant.

NEW VEGETABLES

All the other All-American selections for 1988 come from the vegetable patch, though Okra 'Burgundy' has ornamental possibilities with its bright burgundy-colored pods and red-veined leaves. Don't forget to leave a few pods on the plant to mature and dry. Dried Okra pods make an unusual addition to floral arrangements.

Space is at a premium for many gardeners and cucumber F, Hybrid 'Salad Bush' takes hardly any at all. Disease resistant and early maturing, it requires only two square feet to produce good yields of eight-inch slicing cucumbers. It's compact size makes this winner equally at home in the edible border, container garden or in a hanging basket.

Gourmet vegetables continue to be "hot" items in gardening circles and 1988 brings us not one, but two All-American pepper selections. 'Mexi Bell' hybrid is the first bell pepper with a mildly hot flavor. These TMV-tolerant bush peppers may be harvested when green or left on the plant to change to chocolate brown or a fully ripened red color.

The other winning pepper is 'Super Chili' hybrid. This hot chili has been bred not only for higher yields, but also ornamental value. Holding its fruit upright on semi-compact plants, 'Super Chili' will be an attractive addition to both the edible border and vegetable gardens.

The final 1988 All-American winner and by far the sweetest is the Sweet Corn Hybrid 'Honey 'n Pearl'. A yellow white bi-color corn with nine-inch ears, this elevated-sugar type should be grown isolated from other corn in order to preserve its super sweet quality.

FLOWERS

Another new annual likely to find a place in our gardens is 'Sugar Madness' petunia. With a compact habit and bright orchid flowers with dark veins, it needs little pinching and is very disease resistant. The Petunia 'Streamer' series are extra-large flowered cascading grandiflora types. Available in a wide range of colors, they were bred for use in hanging baskets.

Salvia 'Hotline Salmon' from Park Seed joins the previously introduced 'Red', 'White', and 'Violet' to complete its 'Hotline' series. *Impatiens* 'Red Velvet' is a new super elfin type that blooms prolifically and tolerates quite a bit of sun if mulched and kept well watered.

TOMATOES & ROSES

Tomato lovers should take note of 'Carnival' VFFN. This hybrid is another in the same series from Petoseed which includes the 1984 All-American winner 'Celebrity.'

Rose fanciers with a taste for something different will find just that in 'Blue Skies', a striking blue-colored fragrant Hybrid Tea. It will be available only from Inter-State Nurseries, Box 208, Hamburg, Iowa (catalog free).

NEW IRIS CULTIVARS

With the newly planted Goodman Iris Garden here at Missouri Botanical Garden scheduled for its floral debut in 1988, much attention will be focused on these lovely, hardy perennials. Many exciting new cultivars have been developed recently and a number of these have been introduced by Charles Klehm & Son Nursery. A large selection of Iris is included among many other perennials in their catalog available by writing Klehm Nursery, Rt. 5, 197 Penny Road, South Barrington, IL 60010.

TOOLS & EQUIPMENT

Many catalogs feature gardening tools and supplies, but Gardener's Supply, 128 Intervale Road, Burlington, VT 05401 (catalog free) consistently features innovative and practical items. Some new selections include the Leaf Eater, a lightweight electric machine designed specifically for shredding leaves. This shredder was rated very highly in recent tests conducted by *Horticulture* magazine. Several new products are designed as season extenders for longer vegetable harvests. The Winter Tunnel is an air bubble blanket that will protect plants from temperatures as low as 20°F. It contains a UV inhibitor and should last several years. Agronet is a new generation floating row cover designed for frost and wind protection. Laid directly over plants, it will not abrade them or cause them to overheat.

NEW BOOKS

With all these new plants and products available it will take some thought to integrate them into your current garden scheme. Just such help is available from *Creative Home Landscaping*, a newly published volume from Ortho Books. An idea book for the do-it-yourselfer, it contains advice from a group of professional landscape architects, general contractors and horticultural experts. For those of us who occasionally have to deal with insect pests, another new book from Ortho's How-to series is "Controlling Lawn and Garden Insects." These and many other books for your gardening pleasure are available in the book section of the Garden Gate Shop.

—Chip Tynan, The Answer Service

Don't miss Chip on the KXOK Garden Show (AM 630) each Saturday from 8 to 9 a.m.

FROM THE GARDEN GUIDES

The Jennie Latzer Kaeser Memorial Maze

The new Jennie Latzer Kaeser Memorial Maze looks very much at home between Tower Grove House and the Henry Shaw Townhouse. Dedicated last September, it was made possible through a bequest from Mrs. Albert Kaeser and a gift from Mr. and Mrs. Vernon W. Piper (her daughter). In this setting it recreates in concept the maze constructed by Shaw in the 1860s in Tower Grove Park.

Visitors can wander through the labyrinth of hedges 90 by 90 feet, in an area depressed 2½ feet, so that persons on the outside can watch those on the inside. Hedges of arborvitae on the outer edges and yew on the inside, are maintained at a height of 5½ feet. Gravel paths lead to a central vine-clad gazebo. An observatory is planned for people wishing to see the design from above, and will be constructed later.

History and Meaning

The Maze is a mystery waiting to be solved! A puzzle to put one at a loss. The maze, or labyrinth, is an "intricate combination of passages in which it is difficult to find one's way or to reach the exit," according to the *Random House Dictionary*. Through the centuries mazes have been found in brick or stone floorings, in underground tunneling, in outlines formed in cut turf, and in enclosed hedges.

Always the objective was the same: to frustrate and confuse. The nature of the maze has varied over the centuries. In early times it became a spiritual pilgrimage in which worshipers shuffled on their knees along the twists and turns to reach a central altar. For some Christians it represented an allegorical path to salvation. For others it represented the puzzlements of life and love. For many more it was just a contrivance to amuse.

One of the earliest mazes, a tomb and a monument, appeared in northern Egypt around 2000 B.C. Remnants of it survived until the nineteenth century.

Beginning with the tenth century, the English became maze enthusiasts. The English love to be diverted by wrong turns and dead ends! Turf mazes came into vogue. They were either paths cut a few inches into the grass or the removal of strips of sod to expose the pattern in earth. Turf mazes rely on the play of light and shade, though they look their best in bright sun.

Renaissance mazes were often planted in hyssop, santolina or thyme to delight the senses of the visitor.

The hedge-type maze was planted in some of the best gardens. Some were box, some yew, and some privet. Beech, holly, and hornbeam were also recommended plants.

Mazes flourished in the Tudor period (1485-1603). One example was at Hampton Court. It took 15 minutes to work out an escape.

During the Industrial Revolution and two world wars, the fascination with maze construction, let alone maintenance, dropped off. Today in England there is a renaissance in the Victorian garden form. Old ones have been refurbished and new designs created. Now there are more in England than anywhere, with around 60 in existence. A resurgence in tourism has furthered the trend.

The world's largest maze is at Longleat House—380 by 175 feet. Visitors need 90 minutes to solve its mysteries—long enough for hysteria to set in. It winds under six bridges and twisted paths for 1½ miles.

One designer of mazes, Adrian Fisher, said, "the maze is the negation of everything we do in life—striving to get from A to B quickly."

A New Tour

The Garden Guides are offering a new tour called *The Maze In An Architectural Setting*. The Garden brings together thirteen decades of architectural style in one 79-acre plot. Where else can one find such rich diversity of style? An English Orangery is next to a sleek modern orientation center. An Italian villa faces out toward a geodesic dome. A bold granite fountain seems to erupt out of the earth beside a victorian town house. Everywhere it is a study in contrasts. And the most singular thing of all is that the diversity in architecture is more than matched by the diversity of plants!

—Sally Davidson, Garden Guide

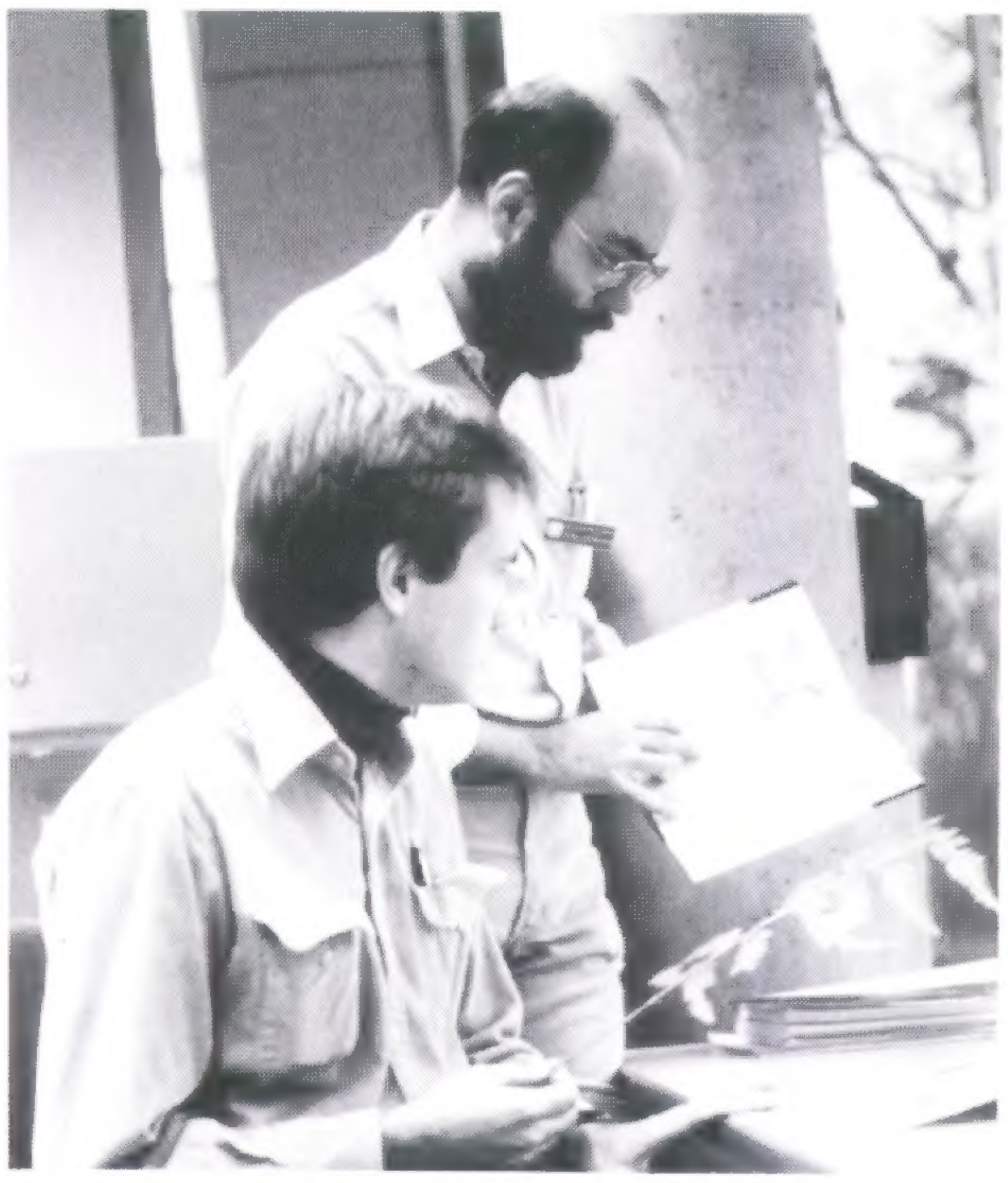
THE FLORA OF NORTH AMERICA:

Meeting a Century-Old Challenge

For over a century, botanists have dreamed of describing all the plants in North America. Henry Muhlenberg, a prominent nineteenth century botanist, exhorted his colleagues: "Let each one of our American botanists do something, and soon the riches of America will be known." Botanical luminaries such as Asa Gray, John Torrey, Benjamin Smith Barton, and Thomas Nuttall attempted to publish floras of North America; some of them completed parts of the flora, while others were forced to abandon their projects by other commitments, adverse circumstances, or death. A Flora of North America was begun many times, but never completed—a surprising gap for a continent that is so well researched. The idea of a continental flora still challenges botanists today.

Dr. Nancy Morin, head of the Herbarium at the Garden, is meeting the challenge of producing a Flora of North America. As convening editor, she has organized a committee to take responsibility for compiling the 11-volume opus. This committee consists of 20 plant systematists (botanists who study and name plants according to their evolutionary relationships) from institutions as diverse as Harvard, Jacksonville State, and the National Museums of Canada. Morin envisions the project as "a cooperative effort. Participants are people who are willing to do a lot of hard work." When asked how she sees her role as convening editor, she says: "I give the project direction, and I'm the glue that holds it together."

The Flora of North America will contain the names and descriptions of all the plants occurring without cultivation in North America north of Mexico, estimated to be between 17,000 and 20,000 species. (The number varies depending on how you divide and name the species. Making such decisions is part of the project's challenge.) Oxford University Press (New York) will publish the books over a 12-year period.



Fern specialists at the Garden, George Yatskievych, standing, and Robbin Moran, are contributing to the *Flora of North America* project. Yatskievych is also revising Steyermark's *Flora of Missouri*, in a cooperative effort with the Missouri Department of Conservation. Moran also serves as editor of ferns for the *Flora Mesoamericana* project, which is sponsored jointly by the Garden, the British Museum (Natural History) and the National University in Mexico City.

The follow-up work "has the potential to become a lifetime project," according to Morin. After publication, a computerized data base containing all the information in the volumes will be constantly updated—a resource for generations of botanists to come.

Producing a Flora of North America means researching the characteristics, habitats, and distributions of all the plants on the continent, and compiling this information into a plant description. A description might tell you, for example, that a certain species of stinging nettle is between half a meter and two meters tall, has toothed leaves and light green flowers, and is found in Arizona, New Mexico, and Texas in moist, shaded places. Since no single person is capable of studying 20,000 plant species in this kind of detail, systematists studying each plant group will write the descriptions.

These specialists won't necessarily work with live plants. Dried, pressed plant specimens, like those housed at the Garden herbarium, will be the keys to producing the Flora of North America. This comes as a surprise to many nonbotanists, but it makes sense. Working with preserved specimens allows a systematist to simultaneously study plants collected from previous centuries and numerous areas—a difficult or impossible task with live plants.

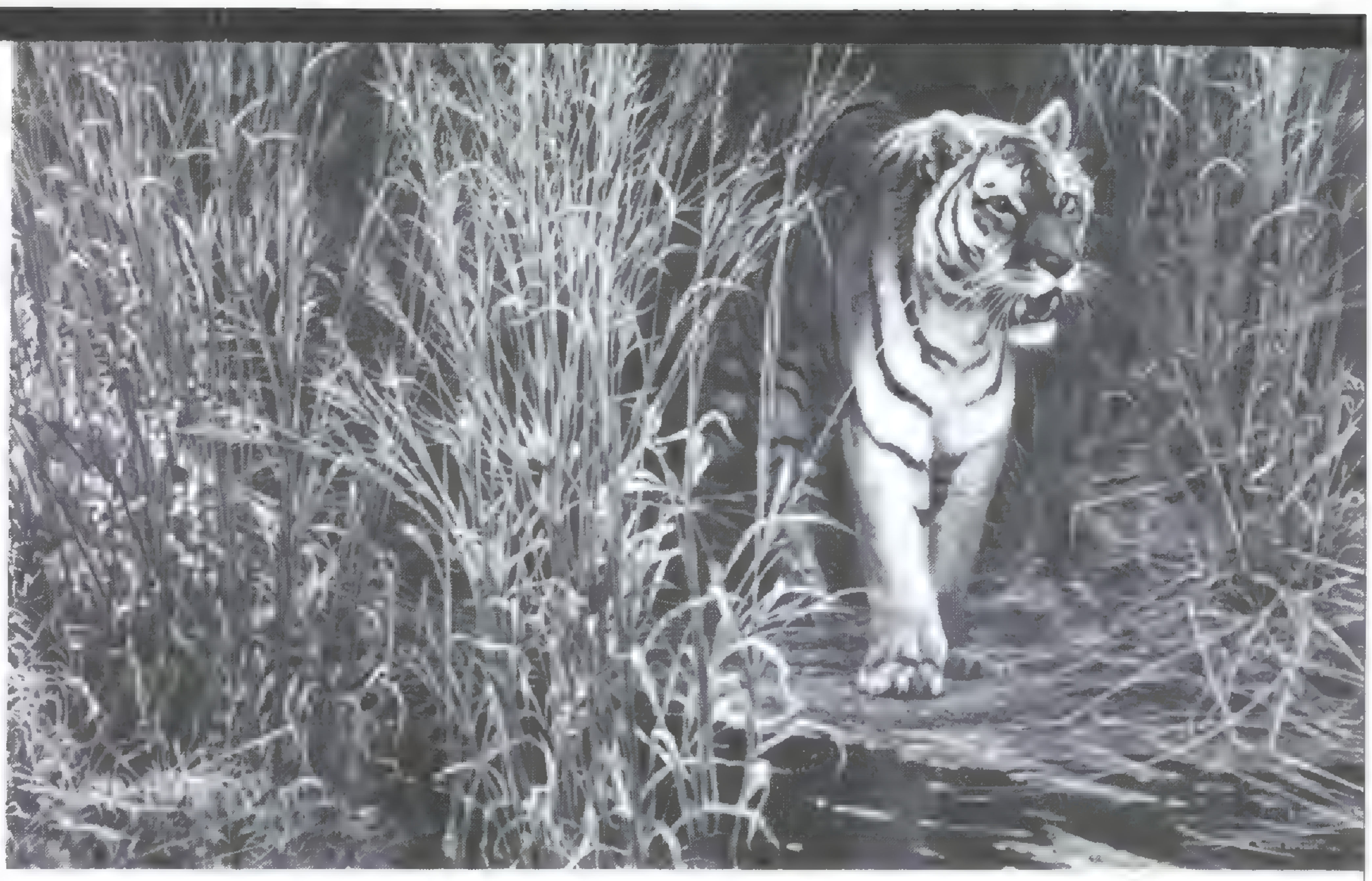
The flora will also have immediate practical value. Horticulturalists, weed scientists, land-use planners, students, agricultural extension agents, and conservationists will be able to use it to find information not readily available now. For example, if a Nature Conservancy scientist wants to know the range of a particular rare violet, he or she might have to search through journals, books, and data bases from several states or regions. Searching can be difficult, especially in areas of North America that don't have current plant lists or descriptions. The Flora of North America will make information about plants available in a compact form comparable to those available about Europe, China, or the USSR, all of which have recently published comprehensive floras.

The Garden is providing in-kind support for the Flora of North America, including computer time and office space, but most of the funding will need to come from the federal government and from private foundations. Finding money to keep the project running has been another challenging task for Morin.

The project is estimated to cost $500,000 per year for the next 12 years. At first glance, that may seem like an overblown price tag for the production of 11 books and a database, but completing the flora requires coordinating hundreds of experts to write plant descriptions, illustrators to draw the plants, editors to polish the final work, and support staff to keep the project going. Many of these people presently donate their time without pay—evidence of their belief in the importance of the project.

Morin and her colleagues plan to create a flora for scholars and laymen, and they're seeking advice from researchers, foresters, curators, and teachers about how to make the volumes usable. The completed flora will be the first catalog of all the known plants in North America—one of the many scientific challenges being met at the Garden.

—Carol Blaney
Project Coordinator



Tiger at Dawn

An Exhibit of Paintings by Robert Bateman

REFLECTIONS OF NATURE

Reflections of Nature, an exhibit of the work of wildlife artist Robert Bateman, will be presented by the Garden from February 6 through March 13, 1988 in the Garden's Ridgway Center. The exhibition will feature more than 40 of the artist's works loaned from private collections around the world including those of Their Royal Highnesses The Prince and Princess of Wales and HRH The Prince Philip Duke of Edinburgh.

To open the exhibit, Mr. Bateman will give a lecture at 5 p.m., Saturday, February 6, in Shoenberg Auditorium. He will also be available to autograph copies of his books, which will be on sale in the Garden Gate Shop. Tickets for the lecture are $10 each and are available, beginning January 18, at the ticket counter in the Ridgway Center.

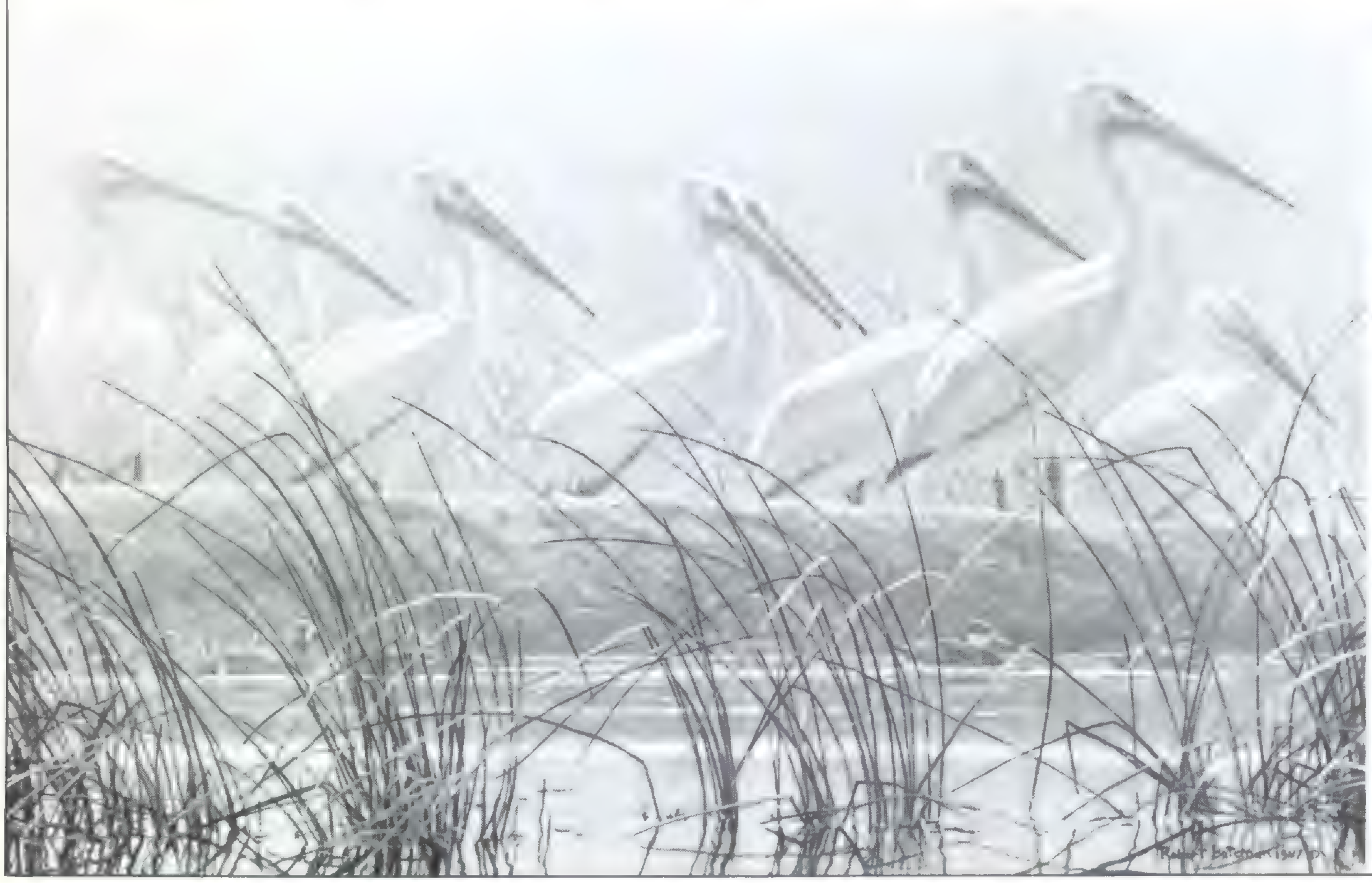
Bateman's images distill a lifetime's experience as an artist, naturalist, teacher and conservationist. As a master realist, Bateman celebrates nature's diversity and the intricate interplay of life and environment. In his paintings the subject and its natural setting are integral, whether he is depicting the animals of the African veldt or the ordinary creatures of a familiar backyard wilderness.

His style is characterized by a careful observation of nature, obvious technical skill, and a powerful artistic imagination. Bateman's paintings capture subjects in the spontaneous moments that reveal nature's transient, ever changing quality. Insisting on knowing his subjects well before painting them, the artist does extensive fieldwork on wildlife and its environment. He has traveled widely, exploring, collecting, sketching and photographing Canada's Arctic frontiers, Australia's Great Barrier Reef, East Africa's game preserves, the Galapagos Islands, the Himalayas of Nepal, the Amazon, the Antarctic, and other exotic areas.

Financial assistance for this exhibit has been provided by the Missouri Arts Council, a state agency, and Mill Pond Press.

February 6 through March 13, 1988

Robert Bateman



Bounty of the Wetlands

Missouri Botanical Garden

CALENDAR OF EVENTS

January-February 1988

JANUARY

1-3 FRI.–SUN.

Holiday Vignettes

9 a.m. to 5 p.m. daily, Monsanto Hall. Last chance to see the holiday creations of some of St. Louis' very best visual merchandisers (window dressers) from Dillard's, Famous-Barr, Neiman-Marcus and Saks Fifth Avenue.

3 SUNDAY

Sunday Guided Tour

2 p.m. Meet at Ridgway Center ticket counter. Enjoy the Garden with a stroll of the grounds led by Garden Guides. Free. Call 577-5140 for reservations.

5 TUESDAY

Walking Tour

1 p.m. Meet at Ridgway Center ticket counter rain or shine. Enjoy the Garden with a stroll of the grounds led by the Garden Guides. No reservations needed. Free.

6-22 WED.–FRI.

Nature Photography Exhibit

9 a.m. to 5 p.m. daily, Grigg Hall, Ridgway Center. An exhibit of photographs by Claire Keeler and Audrey Otto.

8 FRIDAY

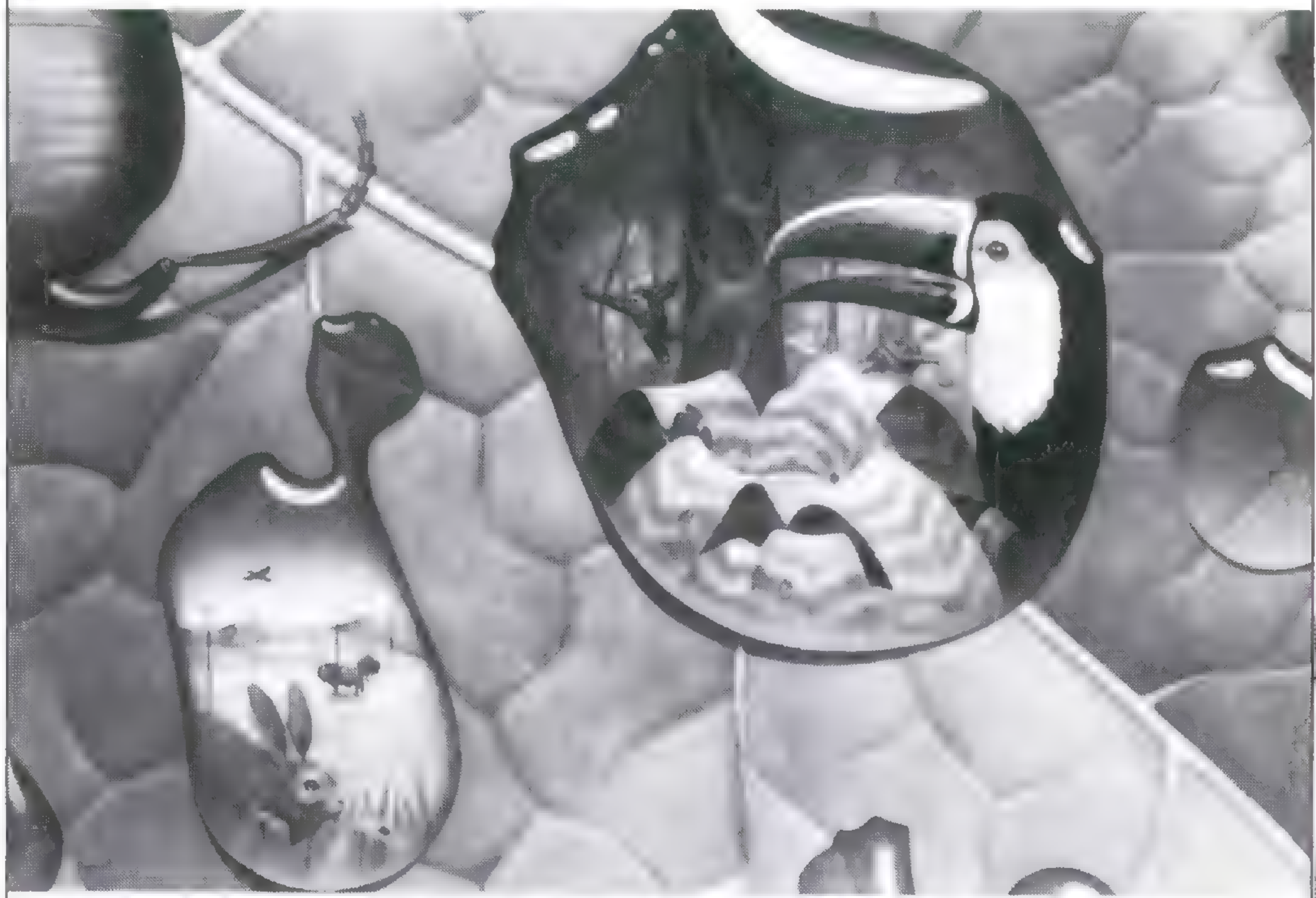
Deadline for Master Gardeners Course Registration

Call 577-5140. See page 19 for more information.

12 TUESDAY

Walking Tour

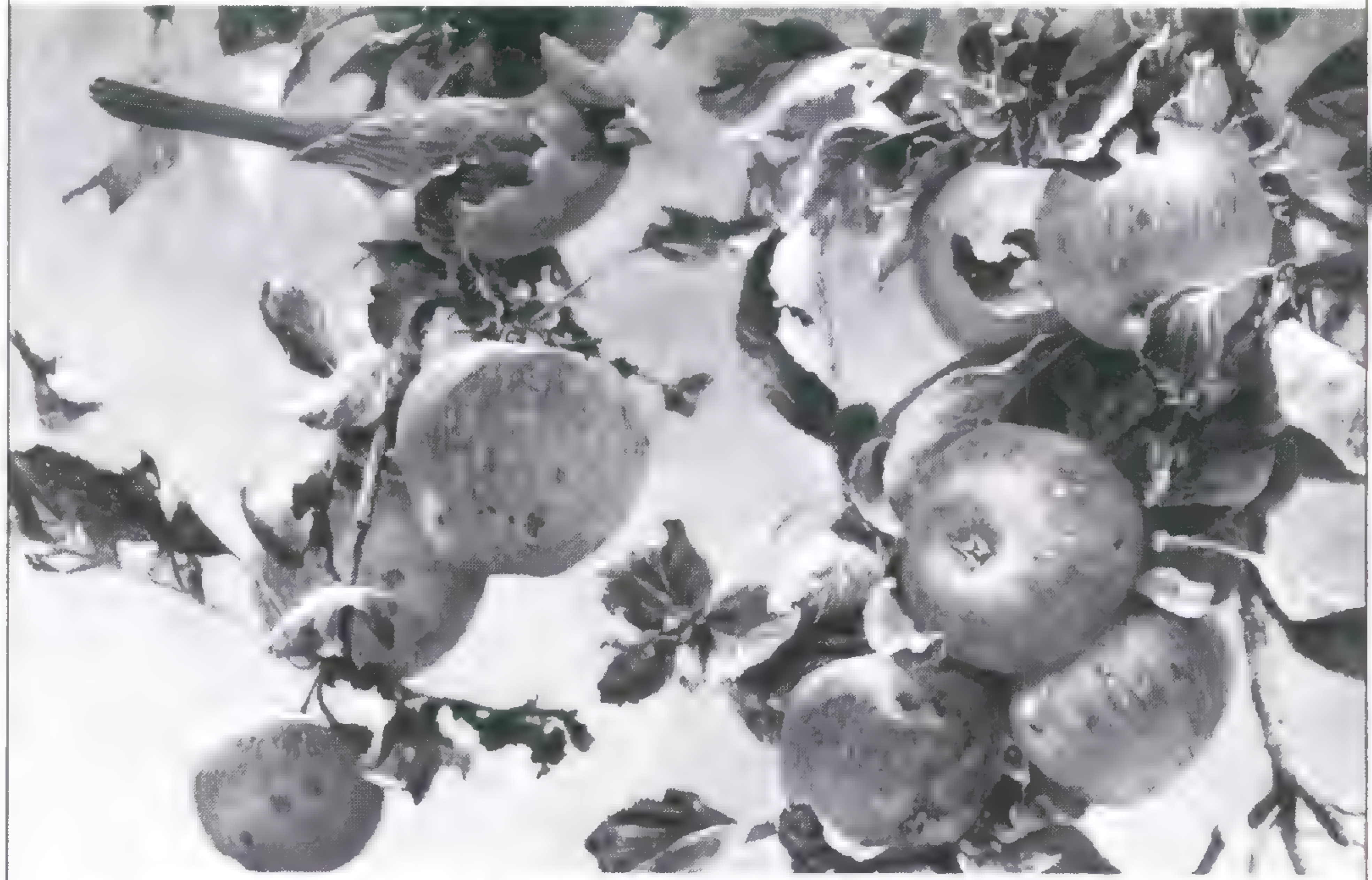
Please see January 5 for details.



JANUARY 23–31 / SATURDAY–SUNDAY

Discover the Tropics

9 a.m. to 5 p.m. daily. Ridgway Center. An exhibit of photographs by James P. Blair of the National Geographic Society entitled "Threatened Rain Forests"; a Smithsonian Institution traveling exhibit, "Diversity Endangered"; and MBG Education Division sponsored "Discovery Rooms."



FEBRUARY 6-MARCH 13 / EXHIBIT

"Reflections of Nature"—Paintings by Robert Bateman

9 a.m. to 5 p.m. daily, Ridgway Center. Nature paintings on display by well-known wildlife artist Robert Bateman. Mr. Bateman will give a lecture at 5 p.m. Saturday in Shoenberg Auditorium. *See page 11.*

12 TUESDAY

Environmental "Update '88"

7:30 p.m., Shoenberg Auditoriu
A panel discussion on the enviro
ment by several noted leaders in
field. Sponsored by the Garden
Club of St. Louis. Free.

19 TUESDAY

Walking Tour

Please see January 5 for details.

22 FRIDAY

Members' Orchid Show Previe

5 p.m. to 8 p.m., Climatron. A
return to the Climatron for this
year's Orchid Show. Also view th
National Geographic Exhibit in
Monsanto Hall.

3 SAT.–FEB. 28

chid Show

.m. to 4:30 p.m. daily, Clima-
n. Annual floral display set
idst "Mayan ruins."
Back Cover.

3 SATURDAY

auty and the Beast

a.m. and 1 p.m., Shoenberg
ditorium. Don't miss this creative
rformance by the Repertory ITC
eatre Company.
Members Only.

6 TUESDAY

lking Tour

ease see January 5 for details.

FEBRUARY 10-MARCH 16
WEDNESDAYS

"Gardening by Design" Lecture Series

1 and 8 p.m., Shoenberg Auditorium. First of six lecture dates—others are Feb. 17 & 24 and March 2, 9 & 16. Kick off for popular lecture series by experts on gardening subjects. Lecturers to be announced. Tickets sold initially on a subscription only basis (six), $20 Garden Members, $25 non-members. Single tickets only available ($4 Garden Members, $5 non-members) if series not sold out, and only at the door the day of the lecture. Watch your mail for details.

FEBRUARY

TUESDAY

alking Tour

ease see January 5 for details.

SATURDAY

inter Tree Walk and Workshop

n us for an indoor-outdoor ses-
on concentrating on winter iden-
cation of deciduous trees and
rubs. We will take a brisk walk
rough portions of the Arboretum
d provide practical experience in
e recognition of trees by their
igs and winter profiles. Identifica-
n of conifers will be considered
efly. Bring a lunch; coffee will be
ovided.

enneth Peck, Technical Advisor,
Hummert Seed Company
30 a.m. to 2:30 p.m.
Rain date: February 13
eet at Arboretum Visitor Center;
course will be held at
Adlyne Freund Education Center.
Member, $10 Non-member,
$8 Senior Citizen

7 SUNDAY

Sunday Guided Tour

Please see January 3 for details.

9 TUESDAY

Walking Tour

Please see January 5 for details.

11 THURSDAY

Arm Chair Garden Tour

11 a.m. and 7 p.m., Shoenberg Auditorium. A slide presentation of North American public conservatories by Bill Wagner, superintendent of display greenhouses.
For Members Only.

16 TUESDAY

Walking Tour

Please see January 5 for details.

17 WEDNESDAY

Gardening By Design

Second of six subscription series lectures. Please see February 10 for more information.

20 SATURDAY

Legends of Black Heritage

11 a.m. - 5 p.m., Ridgway Center. Storytelling and theatre performances for children and adults. Stories of Black heritage. Free.

23 TUESDAY

Walking Tour

Please see January 5 for details.

24 WEDNESDAY

Gardening By Design

Third of six subscription series lectures. Please see February 10 for more information.

FEBRUARY 27-28 / SATURDAY & SUNDAY

Spring Gardening Fair

9 a.m. to 5 p.m. daily, Ridgway Center. Series of informational lectures and exhibits on gardening. Free. Advance reservations required for lectures by calling 577-5125.

FROM THE MEMBERSHIP OFFICE

Travel With the Garden in 1988

Mark your calendars for exciting travel opportunities with the Missouri Botanical Garden this year.

JANUARY 16-27 Costa Rica

This unique 12 day trip highlights the natural wonders, cultural riches and captivating beauty of Costa Rica. Visit the Monteverde Cloud Forest Reserve, the Marenco Biological Station and explore the area's beautiful and delicate ecology. We have also included visits to the National, Gold and Jade Museums, a sunny Pacific Ocean island, and a ride on a scenic narrow gauge train.

MAY 6-19 The Gardens and Villas of Italy

This elegant tour of Italy has been planned by Judy Peil Travel for Garden Members. Escorted by Alan Godlewski, Missouri Botanical Garden's director of horticulture, this trip promises the most phenomenal behind-the-scenes peek at spectacular private gardens, accommodations at private palaces and pampered treatment!

MAY 31-JUNE 10
Historic Gardens and Homes of New England Aboard the *Illiria*

Enjoy this delightful excursion along the majestic Hudson River, the rugged coast of Maine, and the lively Bay of Fundy. We will visit the finest mansions—Boscobel, Lyndhurst, and Vanderbilt Mansion—all in June when their gardens are in full splendor.

Make your travel plans now by calling Brenda Banjak, Membership Coordinator at 577-5108.

Members' Board Elects Officers

At the November meeting of the Garden's Members' Board the following officers were elected: Ellen (Mrs. Henry W.) Dubinsky, president; Sue (Mrs. Rudyard K.) Rapp, first vice president; Ms. Elaine Alexander, second vice president; D'Arcy (Mrs. Robert P.) Elsperman, secretary; and Mr. Frederick H. Atwood III, treasurer.

Be My Valentine

Make your Valentine happy . . . send a Missouri Botanical Garden membership and a box of Fannie May Candy this Valentine's Day. Send the application below or call 577-5118 to order your Valentine membership today. The Garden will deliver this unique Valentine gift to your Valentine's doorstep.

1988 Members' Days

January 23	Repertory ITC Theatre Company—"Beauty and the Beast"
February 11	Arm Chair Garden Tour—Slide presentation on public conservatories in North America
March 3	Garden Lecture
April 9	Arbor Day Celebration for Children and Dads
May 20	Purple Martin Evening
June 16	Guided Tour of New Greenhouses
July 8	Members' Musical Night at the Garden
August 12	Early Morning Stroll
September 15	Water Lilies and Sculpture Walk
October 16	Members' Camera Day
November 15	Older Adults' Day—"World's Fair" Slides and Lectures
December 10	Holiday Decoration Demonstration

GIFT MEMBERSHIP ORDER FORM—*Please mail at least three weeks prior to occasion:*

☐ *Valentine's Day* ☐ *Birthday* ☐ *Other* ______

Gift To:

NAME ______
ADDRESS ______
CITY ______ STATE ______ ZIP______
TELEPHONE ______

Sign gift card: ______
Date Needed By: ______
Regular Membership $35. Contributing Membership $75.

For more information call 577-5118.

Gift From:

NAME ______
ADDRESS ______
CITY ______ STATE ______ ZIP ______
TELEPHONE ______

☐ Enclosed is my check for $ ______
☐ Please charge: VISA No. ______
MasterCard No. ______
Name as it appears on card: ______
Expiration date:______

Please make checks payable to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

HALLOWEEN HAPPENING

On Sunday, October 25, about 1,000 ghosts, goblins and other scary creatures of the night invaded the Ridgway Center and nearby areas. These beings from the other side had only one thing in mind—having fun! The second annual Henry Shaw Halloween Garden, a production of the Members' Board, was a huge success. An event of this magnitude can only happen with a lot of hard work. Special thanks go to event co-chairpersons Mary Longrais and Mico Murphy and their group of 50 volunteers for a wonderful day!

◀ *Winners in the family costume category were, what else, the Amaryllidaceae family.*

NEWS FROM SHAW ARBORETUM

Experimental Prairie Update

Earlier this year Shaw Arboretum received a $20,000 grant from the Edward K. Love Conservation Fund for the Experimental Prairie Project. This timely gift enabled the Arboretum to employ a part-time horticulturist to grow and help plant a new wildflower plot on the north end of the prairie. More than 5,000 plants consisting of eight species of prairie grasses and 42 species of wildflowers were included. This diverse naturalistic planting will also serve as a seed nursery for many species that are not numerous in the rest of the prairie. In spite of the protracted drought, these plants grew well with supplemental watering from a tractor-drawn water wagon and should be spectacular in 1988 and for years to come.

The size of the prairie was increased to 74 acres by planting six more acres north of Mirror Lake. Fifty-six pounds of seeds from four species of prairie grass were planted with a special seed drill brought to the Arboretum by the Missouri Department of Conservation. After drilling in the grass seed, 77 pounds of wildflower seeds were planted by broadcasting directly onto this six acres. Thirty-one species of wildflowers were used, most of which were collected on the Experimental Prairie.

This six-acre planting marks the first time we were able to plant a large area with a large amount of wildflower seeds of so many species and, if successful, it will be a beautiful and diverse addition to the Experimental Prairie.

—Bill Davit
Arboretum Naturalist

Halloween Magic

Halloween, as we know it today, is a collage of traditions and myths that span centuries. Some of these traditions came alive this Halloween when the Arboretum's education staff, and the Garden's ECO-ACT High School Student Leadership Program joined together to create a "Night of Enchantment."

Small groups of big and little goblins, ghosts, and ghouls followed the Jack-O-Lantern lit trail through forest and field where wizard and fairy guides periodically halted their following to set the stage for the ECO-ACT students to perform their creative costumed interpretation of Halloween legends.

For those who touched and were touched by this "Night of Enchantment," these are the treats of Halloween.

—Gary Schimmelpfenig
Arboretum Education Instructor

Library Receives Grant from Department of Education

The Garden's library has been awarded a grant from the United States Department of Education to continue its ongoing project of reclassifying and recataloging its collections into an automated cataloging database (OCLC).

The grant award of $250,000 for OCLC entry will be shared with The New York Botanical Garden. The Garden's share is $108,750. The facilities boast two of the nation's most comprehensive botanical libraries.

The grant award enables the continuation of the project that began in October 1978. Estimated completion of the project is 1990. The Department of Education had previously awarded the Garden an OCLC grant of $104,370 for the period of Oct. 1, 1986 to Dec. 31, 1987.

The continued entry of the libraries' holdings into OCLC is significant due to the over 6,000 OCLC participating libraries that possess terminals and rely heavily on access to the data. It is estimated that the two libraries hold more than 80 percent of the world's printed literature on plant systematics, plant distribution and floristic studies; plant identification; history of botany and horticulture; herbal literature; pre-Linnean botany; and the biographies and bibliographies of botanists, plant explorers and horticulturists. The libraries also hold more than 65 percent of the world's significant published literature in other areas of botanical and horticultural science and gardening.

NEW TEMPERATE HOUSE

continued from page 4

Visual themes of the Garden are incorporated into the new design. For example, the prevalence of limestone as a building material of many structures in the Garden reflects its location in Missouri, where limestone is common. Similar treatment in the new buildings will repeat the limestone of the perimeter wall and the Flora Gate and other structures, although the "stone" will be precast concrete that will look like limestone. Brick is used with the stone, a traditional architectural device for achieving a rich variety with both strength and economy.

Large entry spaces in front of the new buildings set off the Climatron, while views of the new buildings will be softened by existing trees. Buildings become more of a glass wall backdrop than a solid shape. Visitors approaching from any angle will be more aware of the dome and its setting partly through the effect of the new structures.

The design of the new buildings also illustrates several traditions of garden architecture. The masonry base wall of the new Temperate House has been designed as a "garden wall." Somewhat classical in its detailing, it draws its inspiration from the entry pavilion of Flora Gate. The long horizontal bands that tie the complex together contrast visually with the strong rhythm of the "stone"-framed fan openings. The masonry patterns in between create a rich, yet subtle, pattern. The wall itself will provide an understated and picturesque backdrop for garden plantings.

The new pavilions fit well with the dome of the Climatron. It is very important to maintain the pure curve of the dome because of its distinctive shape and its national landmark status. At the same time, the greenhouses provide the best possible environments for the plants.

The redesigned complex represents the interrelationship of tropical, temperate and desert zones and the pivotal potential Man has for affecting his world. Construction on the Temperate House and Interpretive Center is scheduled to begin during 1988 assuming sufficient funds are available. Why don't you visit the Mediterranean House now, and then visit the site during construction of the Temperate House to watch how it goes up. The new greenhouse will provide a whole new microcosm of plants for researchers and visitors. ■

Volunteer Profile

ROBERT "ERIC" AND SALLY ERICKSON

"We have been doing volunteer work in the Garden library since February, 1987. In the autumn of 1986, we knew that we would probably do some kind of volunteer work somewhere, and since we had been Garden Members for many years, we were aware of the large volunteer support which it has," Robert "Eric" Erickson said. "The idea of working in the library appealed to both of us, especially to me, since one of my long-term interests has been in the history of science."

The first project he undertook was to inventory and renumber the approximately 1,000 books in the pre-Linnaean collection. Most books in this collection are not cataloged—therefore not in the card catalog—and must be located with the aid of a three-part guide (part of it hand-written and all of it heavily hand-annotated) that was compiled from 1896 to 1903. In the process of inventorying, Eric assigned a unique number to each item and further annotated the guide with these numbers.

The library's eventual goal is to computerize this list, creating an index to the collection with items retrievable by author, title, number, etc., as a valuable preliminary to fully cataloging each item. Since the collection is shelved by size, not by subject, call number, or alphabetically by author, Eric's inventory has already greatly increased the accessibility of this unique collection. He also located several misplaced books that had long been considered missing.

Eric is now engaged in an inventory of a large collection of nineteenth and twentieth century journals that formerly belonged to the Academy of Science of St. Louis. He is determining whether they are duplicates or whether they fill in gaps in the library's collection and should be added to our holdings.

Sally has been working on the major project of assembling the papers of members of the Garden professional staff. She determines what they have published, gets copies of any missing articles, compiles them into volumes of collected works, and creates a table of contents.

These collections are then bound, cataloged, and added to the library's book collection. This activity has not been actively pursued for several years, so Sally is working from a large backlog and performing a valuable service for the library.

From the Garden Gate Shop

Gardening Goes Video

It may be cold outside now, but spring is just around the corner. You can start planning your vegetable or flower garden now, with the help of Jeff Ball and his *Yardening* videocassette series (Kartes Video Communications). This 12-part series, endorsed by the National Gardening Association, covers all aspects of gardening from propagation to garden design.

No matter what your gardening interests, there is something in this series for you. If you are a vegetable gardener, there are videotapes on warm-weather vegetables, cool-weather vegetables and designing a vegetable garden. If flowers are more your style, look into the videotapes on how to grow flowers, how to grow roses and designing a flower garden. For the indoor gardener, there are tapes on houseplants, greenhouses and sunspaces. There is also a tape on lawn care, and one on growing seedlings.

The *Yardening* videocassettes are all in color, play for 47-60 minutes and are priced at $19.95. They are all available (VHS only) at the Garden Gate Shop.

January Clearance Sale

Thursday, Friday & Saturday

January 7, 8 & 9

9:00 a.m. - 5:00 p.m.

Christmas ornaments, decorations mark downs taken on plants and merchandise throughout the Shop.

Orchid Sale

20% off to Members

January 21 thru February 28

Come to the Orchid Show in the Climatron, then visit the Garden Gate Shop and purchase your own orchids at a 20% savings.

Book Review: *The Companion to Roses*

By John Fisher

This encyclopedic-style reference book on roses is an interesting and informative source for everyone interested in roses, whether they grow them or simply enjoy them for their beauty.

Included are interesting historical aspects, cultivating techniques, achievements of rose hybridizers and collectors, origins of selections, and the influence of the rose in art and literature. A definite "catch-all" book filled with illustrations, photographs, and articles from the past as well as recent and up-to-date information. A great reference for all "types" of rose lovers. *—Monica Barker, Rosarian*

For Younger Members

Nature's Valentine

What symbol makes you think of Valentine's Day? Is it a cupid, flowers or a pair of love birds? For most people the heart is the symbol of Valentine's Day. We make heart-shaped cards, give heart-shaped boxes of candy and write notes that say "I ♥ you."

The tradition of using the heart as a symbol of love predates Valentine's Day. The ancient Greeks saw the heart as the center of emotions such as love, joy and happiness. The formal celebration of Valentine's Day began in the Middle Ages to honor the patron saint of lovers, St. Valentine. The date of Valentine's Day also coincides with the date on which naturalists used to believe birds started their annual mating. This gave celebrators all the more reason to think that February 14 should be a day dedicated to affairs of the heart.

Not only do we humans celebrate Valentine's Day, but Mother Nature also plays her role. She takes an active part in creating natural valentines that last not one day but all year long. You have probably walked right past some of her valentines and never even noticed them. You may even have some in your house. Why not go on a valentine search and see how many heart shapes you can find that are created by nature?

To get started check and see if there is a philodendron growing in your house. Take a close look at the leaves. What shape are they? You will see that they are shaped like a heart. Take your valentine search outdoors and see if you can find rocks shaped like hearts, other heart-shaped leaves or pieces of bark. Look closely at the new tree buds. Do any of them have a heart shape?

Now that you know nature creates perfect heart shapes, you will want to share your discovery with your friends. Listed below are three ways you can give nature's valentines to your favorite friend on February 14.

PROJECT / *Grow a Valentine*

Remember that philodendron you examined. Look at it again and see if it isn't time to help it reproduce. You will have to get the plant owner's permission and help. If the owner agrees that part of the plant can be spared, assemble the following materials.

You will need:

One 2″ clay pot
One cup soil mix
One glass water
Scissors

What to do:

With the help of the plant's owner, locate the end of the philodendron's vine. Find the last two or three leaves and see how they are attached to the vine. Now carefully cut the vine so you have the vine and the last three leaves separated from the main vine. Put the end of the "new" vine in the glass of water in a sunny window and wait two weeks. You will be able to see the vine grow roots. When your vine has started a good root system, transfer it to your clay pot with the soil mixture. You may want to decorate your pot for Valentine's Day.

PROJECT / *Nature's Bookmark*

You will need:

Clear contact paper
White construction paper
Colored markers
Leaves or grasses

What to do:

Before you begin this project you must collect some leaves, grasses or flowers and press them in a phone book. They do not have to dry completely but should be flat.

When your leaves are pressed, cut out a shape for your bookmark from the white construction paper. Then arrange some of your leaves on the bookmark. You may want to decorate it some more with your markers. Next cut the same shape from the contact paper, allowing ¼ inch extra all around. Cut two of your bookmark shapes out of the contact paper.

Attach one piece of the contact paper to the back of your bookmark. Then arrange your leaves on the front of your bookmark, just the way you want them to stay. Seal the front of the bookmark with the other piece of contact paper. Your leaves should keep their color for many months.

PROJECT / *Heart Rubbings*

You will need:

Colored crayons
Drawing paper

What to do:

Use the heart-shaped objects you located outdoors to make a special valentine. Simply place your paper over the object and smoothly rub your crayon on the paper. An image of your natural heart will appear on the paper. Add a verse and give it to your special valentine.

—Stephanie Finke
Youth Education Coordinator

FRAGRANCE FESTIVAL 1988

Fragrance, Flowers and Fun

The Garden and Plaza Frontenac will be the site for the first annual "Fragrance Festival, A Celebration of Scents." Modeled after an enormously successful event in New York, the St. Louis event will take place the week preceding Mother's Day, April 30 to May 8, 1988. The week's activities will include a special Garden opening featuring media celebrities, a benefit floral arranging workshop, a trip drawing, a hands-on potpourri demonstration, and a wonderful floral exhibit at Plaza Frontenac. Sponsors include Plaza Frontenac, St. Louis Magazine, and Missouri Botanical Garden.

Watch the next *Bulletin* and your mailbox for the week's exciting schedule.

Garden Accepting Applications for Master Gardener Program

The Garden, in conjunction with the University of Missouri Extension, is accepting applications for its Master Gardener adult volunteer program. Upon acceptance in the program, Master Gardeners receive a minimum of 30 hours of free training in horticulture and gardening and then donate at least 50 hours in a wide variety of educational services.

"We're looking for avid gardeners eager to learn more—people willing to volunteer their time and share their knowledge and the pleasures of gardening with the community," said Glenn Kopp, instructional coordinator/adult programs for the Garden.

Training for Level I Master Gardeners qualifies them to contribute to Garden-sponsored programs such as the Speakers Bureau, Horticultural Answer Service, Plant Problem Diagnostic Clinics, Educational Fairs and various University of Missouri Extension programs. Gardeners also share their newly acquired knowledge by assisting or teaching Garden classes for children, adults and senior citizens, as well as preparing educational materials.

Level I Master Gardener training covers plant growth, gardening techniques, indoor plants, vegetable gardening, lawn care, fruits, flowers and trees and shrubs. Training for Levels II and III includes problem identification and control, pruning, propagation, landscaping and in-depth study of ornamentals, trees and shrubs. Each level consists of 30 additional hours of training.

Applications can be obtained from either the Garden's Education Division by calling 577-5140, or from the University of Missouri Extension at 889-2911. Applications must be received by **January 8**. Training is scheduled for ten Mondays between February 22 and April 25, 1988, 1 to 4 p.m. daily at the Garden.

Raven Goes to the Vatican

Director Peter H. Raven made a presentation titled "Modern Approach to the Protection of the Environment" on tropical forests during a study week, November 2-7, at the Vatican. The study week was organized by the Pontifical Academy of Sciences.

His presentation spotlighted the dangers to mankind and the environment due to the global decrease in forests and thus biological species. According to Raven, stable and sustainable use of biological resources is necessary to promote human prosperity.

The purpose of the study week was to debate urgent problems of modern societies and basic scientific questions. The Academy is particularly interested in controversial issues, global problems, questions regarding developing countries, and nuclear war. The conclusions of the study week will be published by the Academy.

Grant for Soule Center

The Garden's education division has received a CAMELOT/Special Projects grant of $4,500 from the Arts and Education Council of St. Louis to enable the Garden to offer several art education classes this fall to members of the Samuel D. Soule Center for Senior Citizens. The Soule Center is a unique horticultural program designed especially for adults 65 years-of-age and over.

The classes offered as a result of the grant include "Drawing Plants,""Seasonal Nature Crafts," "Creative Writing" and "Advanced Watercolor." All of the courses will use nature as the source of inspiration. The students' work will be showcased at the Garden in a public exhibition next summer.

For more information on the grant and on the Soule Center, call 577-5140.

Trustee Profile *MARION PIPER*

JENNIE LATZER KAESER MEMORIAL MAZE DEDICATION: Mrs. Piper addressing family and friends at the special dedication of the Maze.

An instructor at the Universities of Missouri and Illinois, a Navy lieutenant in communications, a wife and a mother and an avid gardener—all of these describe Mrs. Vernon Piper, a trustee on the board since 1981. With three gardens at three different locations, Mrs. Piper and her husband, Vernon Piper, spend a considerable amount of time gardening. As a child, Mrs. Piper was exposed to formal and informal gardens at her home in Highland, Illinois. Her mother was such a garden enthusiast, she had a designer lay out a formal garden behind their house. Mrs. Piper's mother developed a keen interest in gardens and was always happy to present gardening programs for community clubs.

Following her marriage, Mrs. Piper moved to St. Louis and she and Mr. Piper brought their three children to the Garden regularly. "It was the only place open on holidays—a place that was interesting, beautiful and a place children could enjoy while we explored what interested us. Bringing our children to the Garden and seeing the mazes in our travels to England and the east coast, piqued our interest in a maze at the Missouri Botanical Garden. It seemed like the perfect opportunity to create something very special, something we could enjoy that would always remind us of my mother," Mrs. Piper recalled.

Now the Pipers, including two of their children, Bill and Jane, are Garden supporters. Mrs. Piper and her husband spend a significant amount of time today trying to keep up with her family garden in Illinois, their own home garden and their garden at their farm outside of St. Louis. According to Mrs. Piper, the greatest challenge is maintaining a garden. "What you do doesn't show; it's what you don't do that shows."

Even though she is sometimes "caught" between gardens, Mrs. Piper takes her trustee responsibilities very seriously and attends meetings regularly. Enthusiastic about the Garden's future, she sees the projects in the present capital campaign as a wonderful way to reach out and make the Garden available to a broader segment of the St. Louis community. "I think the Center for Home Gardening is especially attractive and will bring new visitors to the Garden while expanding our opportunities for growth in education, science and display."

Calendar Brings World-wide Attention to Garden and St. Louis

Each year the Director's Office mails over 3,000 Missouri Botanical Garden Calendars to other botanical gardens, universities, foundations, scientists, business leaders, elected officials and others around the globe. The calendars, which are always well received, have helped the Garden earn and maintain its international reputation as a first class institution.

Funding for this effort over the last two years has been generously provided by Mrs. Thomas W. Schield of St. Louis. "The Garden is such a wonderful place and the calendars are so beautiful I wanted to share its beauty with others," Mrs. Schield said. "It's also marvelous public relations because you can now see the Garden from almost anyplace in the world."

Godlewski Awarded Citation by National Council of State Garden Clubs

Alan Godlewski, director of horticulture, has been awarded the Presidential Citation from the National Council of State Garden Clubs, Inc. The citation recognizes Godlewski's help in designing the National Council's newly dedicated Hedley Wildflower Garden, as well as ongoing assistance in the development of the grounds of the organization's headquarters.

The wildflower garden is located on the grounds of the National Council's headquarters at 4401 Magnolia Ave. The garden and the building can be seen by visitors to the Missouri Botanical Garden by looking south of the path that overlooks the lotus bed in the Japanese Garden. The wildflower garden has a naturalistic look, with anticipated blooming coming in the spring.

The National Council is the largest organized group of gardeners in the world, and represents 300,000 members in 11,000 garden clubs nationwide. Members have strong interests in growing plants, flowers, shrubs, trees, fruits and vegetables. They are also interested in landscaping and the environment.

Wheelchairs Needed

The Garden is in need of wheelchairs for use by its visitors and would be happy to receive wheelchairs in good working condition as donations. For the past several years, the Garden has provided wheelchairs as a courtesy and currently has only one chair in working condition. Persons interested in donating a wheelchair should call Teri Dresler at 577-5142.

CONSTRUCTION CONTINUES: Workmen assembling the new production greenhouses. The new greenhouses are located just west of the Tram Shelter and will be used to propagate and raise plants for installation in the display gardens and in flower shows.

Raven Receives Honorary Degree from Swedish University

Dr. Peter H. Raven received the degree of Doctor Honoris Causa from the faculty of Göteborg University in Sweden on October 24.

The degree recognizes Raven's contributions to botany, especially in the field of systematic botany. Systematics is the documentation of organisms and the grouping of them in a way that reflects their evolutionary relationships.

Raven has a history of supporting and working with botanists from Göteborg and the university's neotropical research group in the department of systematic botany.

Raven Receives Medal from Massachusetts Horticultural Society

Dr. Peter H. Raven has been named the 1988 recipient of the George Robert White Medal of Honor, the Massachusetts Horticultural Society's highest award. He accepted the medal at the society's third annual Patron Dinner in Boston on November 14. Raven also delivered the keynote address that evening on the subject of tropical deforestation.

The medal is awarded annually to individuals who make substantial contributions to the fields of horticulture and conservation. Dr. George T. Moore, director of the Missouri Botanical Garden from 1912 to 1954, received the medal in 1939.

STATEMENT OF OWNERSHIP MANAGEMENT AND CIRCULATION (Required by 39 U.S.C. 3685) 1. Title of publication: BULLETIN. Publication No. 0026-6507. 2. Date of filing: October 1, 1987. 3. Seven times a year, monthly in January, March, July, September and November and semi-monthly in May. $12.00 per year. 4. Location of known office of publication: 4344 Shaw, St. Louis, MO 63110. 5. Location of the headquarters or general offices of the publishers: P.O. Box 299, St. Louis, MO 63166. 6. Names and complete addresses of publisher and editor are: Publisher—Board of Trustees, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166. Editor—Lee B. Fox, P.O. Box 299, St. Louis, MO 63166. 7. Owner: Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166. 8. Known bondholders, mortgagees and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: None. 9. The purposes, function and nonprofit status of this organization and the exempt status for Federal income tax purposes has not changed during the preceding 12 months. Authorized to mail at special rates (section 423.12 DMM). 10. Extent and nature of circulation: A. Total no. copies printed. Average no. copies each issue during preceding 12 months 22,530. Actual no. copies of single issue published nearest to filing date 23,100. Paid Circulation: 1. Sales through dealers and carriers, street vendors and counter sales. Average no. copies each issue during preceding 12 months -0- . Actual no. copies of single issue published nearest to filing date -0-. 2. Mail subscription: Average no. copies each issue during preceding 12 months 20,454. Actual no. copies of single issue published nearest to filing date 20,857 C. Total paid circulation: Average no. copies each issue during preceding 12 months 20,454. Actual no. copies of single issue published nearest to filing date 20,857. D. Free distribution: Average no. copies each issue during preceding 12 months 375. Actual no. copies of single issue published nearest to filing date 375. E. Total distribution: Average no. copies each issue during preceding 12 months 20,829 Actual no. copies of single issue published nearest to filing date 21,232. F. Copies not distributed: 1. Office use, left over, unaccounted, spoiled after printing: Average no. copies each issue during preceding 12 months 1,701. Actual no. copies of single issue published nearest to filing date 1,868. 2. Return from news agents: Average no. copies each issue during preceding 12 months -0- . Actual no. copies of single issue published nearest to filing date -0- . G. Total: Average no. copies each issue during preceding 12 months 22,530. Actual no. copies of single issue published nearest to filing date 23,100. I certify that the statement made by me above is correct and complete. (signed) Lee B. Fox, Editor Manager of Publications

Tributes SEPTEMBER - OCTOBER 1987

In Honor Of:

Mr. McPherson Beall
Webster Groves Presbyterian Church

Mr. and Mrs. Louis Berger
Mr. and Mrs. Melroy Hutnick

Mr. and Mrs. Albert G. Beyer
Art and Mae Grice
John and Shirley Grice
Mr. and Mrs. Sidney Schoenfeld
Miss Ruth Seabold
Betty Townsend

Mrs. Kenneth Bitting II
Mr. and Mrs. Brent F. Stansen

Miss Karen Blinder
The Robert Platzers

Mr. and Mrs. Richard Connors
Mr. and Mrs. Phillip Schreiber

Mrs. Barbara Cook
Bev and Phil Barron
Mr. and Mrs. Donn H. Lipton

Mr. Richard B. Cronheim
Dr. and Mrs. Llewellyn Sale, Jr.

Mr. and Mrs. Edwin J. Euler
Mr. and Mrs. Leonard G. Euler

Mr. and Mrs. George Ewing
Mr. and Mrs. Frank L. Key

Edward Alaire Falk
Susan C. Merrick

Dr. and Mrs. Jerome Flance
Mr. and Mrs. Lester R. Adelson
Mr. and Mrs. Charles J. Cook
Mrs. Harold W. Dubinsky
Mrs. Jane A. Jacobs
Mr. and Mrs. Henry C. Lowenhaupt
Dr. and Mrs. Harry Rosenbaum
Mrs. Ben H. Senturia
Dr. and Mrs. Hyman R. Senturia

Mr. and Mrs. Robert Franklin
Mr. and Mrs. Bernard A. Barken

Mr. and Mrs. James Frye
Miss Mary J. Davis

Mrs. Bevie German
Mr. and Mrs. Charles J. Cook

Mr. and Mrs. Robert Ginsburg
Mr. and Mrs. Charles J. Cook

Mr. and Mrs. Reuben Goodman
Mr. and Mrs. Bernard A. Barken

Mrs. Edward Hanna
Mr. and Mrs. Donald M. Strathearn

Leigh Atherton Hobler
Sam and Louise Golman

Mr. and Mrs. Emil Hradsky
Mr. aud Mrs. Roy McCauley

Mr. and Mrs. Hubert Hundelt
Mr. and Mrs. Raymond Nehmen

continued on next page

Tributes

continued

Mrs. Otto Kruse
Mrs. Thomas S. Hostetter
Mr. and Mrs. Richard Kuehn
Mrs. Doris K. Grattendick
Mrs. June Kummer
Frontenac Garden Club
Mr. Harry Labovitz
Mr. and Mrs. Herbert M. Talcoff
Mrs. Jane Lending
Mrs. Edyth L. Friedman
Dr. Maurice Lonsway, Jr.
Children's Hospital Staff
Mr. and Mrs. Sidney Martin
Mr. and Mrs. Rudolph Freedman
Mrs. Alex Miltenberger
Mr. and Mrs. Thomas S. Hostetter
Mr. and Mrs. Ralph J. Morrell
Mr. and Mrs. Charles W. Oertli
Mr. and Mrs. George Newton
Mr. and Mrs. Frank L. Key
Dr. and Mrs. Roy Osterkamp
Mr. and Mrs. Howard F. Baer
Mrs. Carl F. Kottmeier
Dr. and Mrs. R. P. Wunderlich
Mr. Meyer Paukewer
Mrs. Edyth L. Friedman
Christine C. Rapp
Martin E. Gardner, Jr.
Marjorie G. Yenawine
Ms. Ella Mae Roberts
Mr. and Mrs. Richard B. Rosenthal
Mrs. Boyd Rogers
Ms. Marjorie Robins
Mr. and Mrs. Gil Rosenthal
Mrs. Harold W. Dubinsky
Mrs. Olga Ruhe
Doris, Jeanne, Bill and Joan Grattendick
Mr. and Mrs. Edward Scallet
Mr. and Mrs. Harold Abrams
Mr. and Mrs. Sydney Shoenberg, Jr.
Mrs. Harry W. Loeb
Dr. and Mrs. Peter H. Raven
Dr. and Mrs. Harry Rosenbaum
Mrs. Herbert S. Schiele
Mrs. Florence G. Stern
Esther and Lou Silverglat
Abe and Hermine Trillin
Kathy and Andrea Trillin
Mrs. James W. Singer, Jr.
Dr. and Mrs. Llewellyn Sale, Jr.
Dr. Oscar H. Soule
Mr. and Mrs. Aaron Fischer
Mr. and Mrs. Robert H. Sperreng
Mr. and Mrs. Arthur E. Eschrich
Mrs. Whitelaw T. Terry
Julia Barnes
Mr. and Mrs. Robert B. Smith
Betsy Terry
Mr. and Mrs. Whitelaw T. Terry, Jr.
Mr. and Mrs. William Thias
Vicki, Dawn and D. J. Hrebec
Anne Thurmann
Elena Thurmann
Erich and Suzanne Thurmann
Maria Thurmann
Dr. and Mrs. Manfred Thurmann
Mr. and Mrs. Tom Walton
Mrs. Martin E. Seidel
Dr. Ray Wolff
Mr. and Mrs. William B. Eiseman, Jr.

In Memory Of:

Mr. William Clark Adreon
Mr. and Mrs. William H. Giese, Jr.
Mr. and Mrs. Elmer W. Wiltsch
Mr. Alexander McNair Bakewell
Mr. and Mrs. Arthur Bertelson
Mrs. Jessie Lee Bakula
Mr. and Mrs. James E. Hullverson
Mr. and Mrs. David G. Lupo
Mr. O. L. Bassham
Mrs. L. A. Bainter
Corrine Bastien
Ms. Louise C. Ittner
Jonathon Becker
School of Business Administration
University of Missouri-St. Louis
Lindell Chew
Dennis Dossett
Donald Driemeier
Dorothy Gano
David Gustafson
James Krueger
Donald Kummer
William Link
Kenneth Locke
Harriett May
Audrey S. Nourse
Vicki Sauter
Dr. Catherine H. Schein
Ottilia Voegtli
Mr. Norman Bierman
Mr. and Mrs. Lester R. Adelson
Mrs. Lillian Bissell
Mr. and Mrs. Edward H. Canter
Mrs. Judith David
Mr. and Mrs. James A. Hopkins
Mr. and Mrs. James C. Hopkins
Mrs. Lucy Butler Bixby
Alexander Bakewell Family
Mr. and Mrs. Arthur Bertelson
Mr. and Mrs. Henry J. Butler
Mother of Mrs. Allen Borucke
Mr. and Mrs. Richard B. Rosenthal
Mr. Paul Brakensiek
Mr. and Mrs. Thomas G. Henkle
Mrs. Billie Brossard
"Apple Of Your Eye" Girls
Mr. and Mrs. William G. Baker
Elizabeth M. Blagbrough
Mr. and Mrs. John E. Bokern
Mr. and Mrs. Jack F. Cahill
Mrs. Jane C. Coles
Mr. and Mrs. Robert Connors
Mr. and Mrs. Gerry Grossman
Mr. and Mrs. Tom Holling
Mr. and Mrs. David M. Homeier
Dr. and Mrs. Everett W. Kling and Family
Mr. and Mrs. Charles H. Mahn
Mr. and Mrs. G. Randall Martin
Mr. and Mrs. James F. McMillan III
Mr. and Mrs. James Monahan
Mr. William J. O'Herin
Mrs. James Sprick
Mr. and Mrs. Thomas M. Tebbetts
Mr. and Mrs. Hugh C. Webster
Mr. and Mrs. William B. Wilson
Mr. and Mrs. Robert W. Wolters
Mother of Barry Buchmueller
Mr. and Mrs. Brent Stansen
Mrs. Olive Bull
Mr. and Mrs. Warren R. Kunstman
Mr. Charles Burns
Mr. Fred J. Rock
Marjorie Burr
Mr. and Mrs. Paul Wright
Mrs. Patty Carnathon
Mr. and Mrs. Robert D. Rich
Mrs. Esther Carter
Mr. and Mrs. Howard Dissly
Mr. C. Calvin Christy
Miss Rosemary Woodworth
Mrs. Helen Clement
Ladue Garden Club
Mr. and Mrs. James A. Singer
Mr. Carl Coleman
Mrs. Hazel L. Knapp
Dr. Henry C. Cowles
Mr. and Mrs. W. Edmund Waller
Mrs. Alice Cox
Mrs. Alice Goetz
Mrs. Vera D. Cox
Ms. Patti L. Baur
Mrs. Richard I. Brumbaugh
Ms. Sybil Burton Castrillon
Mrs. Henry P. Duncker
Mr. and Mrs. William H. Engelsmann
Mr. and Mrs. D. Goodrich Gamble
Mrs. Richard D'Oyly Hughes
Mrs. John D. Lodwick
Mrs. Lila J. Lohr
Mr. and Mrs. John Loy
Mr. and Mrs. Carroll F. McMahon
Joan, Tim and Ruel Murphy
Mr. and Mrs. Buford Pickens and Sons
Mrs. Peter Crump
Mrs. Donald Mayes
Mrs. J. Horner Davis
Mr. and Mrs. Norris Allen
Mrs. Mary Dicicco
Mr. and Mrs. Richard B. Rosenthal
Mr. Ernest Esberg
Mr. and Mrs. Merlyn M. Hoffman
Mr. Don Eubanks
Mr. and Mrs. Steven J. Nissenbaum
Edgar A. and Ethelyn C. Fay
Gloria Fay and Friends
Mr. Willard Finberg
Mrs. Frances Rothman
Mrs. Hilda Gallagher
Mr. and Mrs. John G. Buettner
Mr. and Mrs. John O'Meara
Mrs. Harriet Garman
Mr. and Mrs. Charles T. Fike
Mr. Jules Gewinner
Mr. and Mrs. Robert Vieth
Mrs. Rebecca Stevens Gilliam
Mrs. H. Eugene Handkins
Mr. and Mrs. Paul A. Kannapell
St. Louis Horticultural Society
Mr. and Mrs. Harry Sibley
Mr. and Mrs. Victor H. Warnusz
Mr. Robert C. Will
Marie Gilmour
Mr. and Mrs. Gerry Grossman
Mr. Robert J. Golub
Dr. and Mrs. Llewellyn Sale, Jr.
Mrs. William Goodin
St. Louis Horticultural Society
Mrs. Frances Gore
Rose Society of Greater St. Louis
Mrs. Mary Gowan
Mrs. William H. Leyhe, Jr.
Mrs. Esmerelda Grabbe
Mr. and Mrs. Walter Hosea
Jeri Grissinger
Mr. and Mrs. George H. Buchanan, Jr.
Mrs. Anna Mae Groloch
Mrs. Lineta E. Tompkins
Mrs. John I. Grotpeter
Helen F. Silverman
Harry Hartkopf
Mr. and Mrs. Clarence T. Wilson
Betty Lou Hartzell
Dave and Missy
Don and Harty
Jim and Donna
Steve and Monie
Mr. and Mrs. Fredrick Hayman-Chaffey
Mr. and Mrs. Martin Schneider
Miss Bertha Herr
George Gerken
Dorothy McKinley
George McKinley
Mrs. Melissa McKay Hickey
Mr. and Mrs. T. Ellis Barnes II
Mrs. Mary Hildreth
Mr. George R. Durnell
Mrs. David Howland
Ms. Ruth E. Buerke
Mrs. Mae Hunter
Miss Bess J. Corn
Miss Louise C. Ittner
Mr. and Mrs. John W. Joynt
Mr. and Mrs. Arthur F. Boettcher, Jr.
Mr. Richard Karr
Mr. George R. Durnell
Ms. Lynn K. Silence
Mrs. Kasakoff
Ms. Helen F. Silverman
Mr. Michael Kern
Mr. and Mrs. Bernard Levin
Mrs. Louise Kienle
Mr. and Mrs. Arthur W. Anderson
Mr. John Kirk, Jr.
Teel Ackerman and Martin O. Israel
Mrs. William H. Leyhe, Jr.
Mrs. Sylvia I. Shapiro
Mr. John Kistner
Mr. and Mrs. Warren Winer
Mr. Richard Kobusch
Mrs. George C. Bitting
Mr. and Mrs. Bertram B. Culver, Jr.
Mr. Clark V. Graves
Mr. and Mrs. Robert E. Kresko
Mr. and Mrs. Lee M. Liberman
Mrs. Whitelaw T. Terry, Sr.
Ms. Alicia P. Withers
Mr. Harry G. Koerber
Mr. and Mrs. John Hallett

Mrs. Lorena Kraushaar
Marilyn J. Burba
Mrs. James Butler Bushyhead
Mr. and Mrs. Robert C. Crowe
Mr. and Mrs. David L. Hinkson
Washington University-Public Relations

Mrs. Virginia Elsie Kroner
Mr. and Mrs. Walter H. Sauer

Mrs. Julia M. Lamy
Mr. Edward L. Bakewell, Jr.
Mr. and Mrs. Robert A. Black
Mrs. William A. Borders
Mr. and Mrs. William Boyd
Mrs. Gustavus A. Buder, Jr.
Mrs. M. E. Kelley Cavin
Mr. Charles E. Claggett
Mrs. Dwight W. Coultas, Jr.
Mr. and Mrs. Leo P. Cremins, Jr.
Mrs. John E. Curby
Mr. and Mrs. Edwin Grossman
Mr. and Mrs. J. Joseph Horan
Mr. and Mrs. Richard S. Jones
Mr. and Mrs. W. Boardman Jones, Jr.
Mr. and Mrs. Roy W. Jordan
Mr. and Mrs. Ryland C. Kessinger
Mrs. Carroll S. Mastin
Mr. and Mrs. Kimball A. McMullin
Ms. Patricia K. Meier
Mrs. Eleanor J. Moore
Dr. and Mrs. Richard I. C. Muckerman
St. Louis Horticultural Society
Mr. and Mrs. Daniel L. Schlafly
Mr. and Mrs. F. Carl Schumacher
Mr. and Mrs. Richard D. Shelton
Mrs. Thomas W. Shields
Mrs. Norma Silber
Mrs. Martha N. Simmons
The Garden Club of St. Louis
Mrs. Daniel Upthegrove
James and Helen Whealen

Mr. and Mrs. Charles Lamy
Miss Mary Elizabeth Bascom
Mrs. A. Shapleigh Boyd, Jr.
Mr. and Mrs. Bertram B. Culver, Jr.
Mr. and Mrs. John E. Curby, Jr.
Mrs. Arthur A. Dunn, Jr.
Mrs. Leicester B. Faust
Mr. and Mrs. Charles W. Freeman
Mrs. Samuel F. Gordon
Mrs. Robert V. Heffernan
Mr. and Mrs. Raymond W. Peters II
Mr. and Mrs. John E. Pryor
Dr. and Mrs. Peter H. Raven
Mr. and Mrs. Oscar W. Rexford
Mr. and Mrs. Paul Fusz Ring
Mrs. John M. Shoenberg
Mr. and Mrs. Robert B. Smith
Mrs. David Q. Wells
Ms. Alicia P. Withers

Miss Bernice Langenohl
Miss Mary C. Guinn

Mrs. Charlotte T. Larson
Carol Bauer
Dr. and Mrs. George A. Mahe
Mrs. Florine Sorkin
Margaret Yanevich

Mrs. Irene Letson
Mrs. Robert H. Kittner

Augusta and Edgar Littmann
Miss Carol L. Littmann

Mrs. Josephine Longstaff
Mr. and Mrs. Robert C. Purk

Mrs. Virginia Luning
Mr. and Mrs. Edmund A. Luning and Family

Mr. Patrick Malley
Mr. and Mrs. Harry Salniker

Mrs. Olive Lee Mare
Mrs. W. K. Bliss
Mr. and Mrs. Tom S. Eakin, Jr.
Mrs. Tom E. McCary
Mr. and Mrs. Carroll F. McMahon
Mrs. Ralph H. Metcalf
The Boatmen's National Bank of St. Louis—Officers and Directors

Mr. William Marks
Jane and Leon Ruh

Mrs. Ruth Martin
Mrs. Martha Spengler

Mrs. Frances McDougall
Mr. and Mrs. Paul J. Stuart

Mrs. Samuel McPheeters
Mr. and Mrs. W. Boardman Jones, Jr.
Mr. and Mrs. Charles L. Tooker

Mr. Duncan Ivers Meier, Jr.
Mrs. E. R. Hurd, Jr.

Mr. Philip Melby
Mrs. Robert Wanek

Dorothy Mettler
Rosemary Johnston

Mr. Robert Metzger
Mr. and Mrs. Bernard W. Colton
Mrs. Harold M. Engelhorn

Mrs. Virginia M. Pemberton
Mr. and Mrs. Leonard Kantor
Mr. Fred J. Rock

Elizabeth Simon Phelan
Mrs. Carl Otto

Frank Polowick
Mrs. Dorothy R. Polowick

Mrs. Mary Purcell
Mrs. Joseph H. Harper

Dr. Stuart A. Queen
Alma Simms
Myra Simms

Mrs. Betty Reddick
Mr. and Mrs. Robert D. Rich

Mrs. Rose Rennard
Dr. and Mrs. Michael Rumelt

Mr. Oliver Lee Ruffing
Miss Emily E. Wende

Virginia Ruwe
Mr. and Mrs. Kurt Grindstaff
Claire Stewart
Patti Stewart

Mrs. Julian G. Samuels
Mrs. Jane A. Jacobs

Mr. Bernard Schaab
Dr. and Mrs. Peter H. Raven

Mrs. Ben Schermer
Mr. and Mrs. James M. Henderson

Mr. Harold Schulz
Mrs. Helen E. FitzRoy

Mrs. Aimee Schumacher
Webster Groves Garden Club—Group 7

Mrs. Tracy Shade
Mrs. Hazel L. Knapp

Mrs. Fannie Shapiro
Mrs. Frances Rothman

Mr. Ralph Sherberg
Ms. Helen F. Silverman

Grandfather of Mrs. Lillie Simpson
Gallaudet School Staff

Mrs. Anne Smyser
Mr. and Mrs. Gabriel J. Alberici
Mrs. Margaret E. Bannister
Mr. Leonard B. Barlow
Mr. Donald H. Bergmann
Mrs. W. K. Bliss
Mr. Thomas C. Cobb
Dr. Fred A. Couts
Ms. Lucy Maude Estep
Mrs. Florence Faires
Mrs. Angela Fresta
Ms. Muriel Goddard
Mrs. Martha B. Goeth
Ms. Laura C. Guy
Mrs. Kate W. Haertter
Mr. Joseph O. Heckman
Mrs. Howard H. Hubbell
Mrs. Richard D'Oyly Hughes
Col. and Mrs. D. H. Hundley
Mr. Charles R. Jarman
Mrs. Myra Johnston
Mr. and Mrs. William B. Jones, Jr.
Dr. and Mrs. James W. Kessell
Dr. Vita J. Land
Mrs. Raymond E. Lange
Mr. and Mrs. Thomas F. Latzer
Mrs. Claude B. Martin
Mr. and Mrs. Edward W. Martin
Mrs. Tom E. McCary
Mr. Charles D. Mueller
Mrs. Robert W. Murch
Mr. and Mrs. Francis M. Nevins, Jr.
Mr. Kurt Perlsee
Mrs. Muriel Ramsay
Mr. James W. Robinson
Zonna and John Sutherland
Molly and Jackie Sverdrup
Millie Teter
Ms. Tessa Tilden-Smith
Mrs. Frederick W. Wehmiller
Mr. and Mrs. L. Alvin Will
Mr. and Mrs. Eugene S. Williams
Dr. Harold S. Zarkowsky

Father of Doris Strong
Teel Ackerman and Martin O. Israel

Bess Talcoff
Mrs. Nancy R. Sachs
Mr. and Mrs. Donald Steele

Hon. Clarence Tiemeyer
Mr. and Mrs. Nathan B. Kaufman

Mr. James C. Walsh
Mrs. David J. Newbern

Mr. and Mrs. Michael Wiesbecker
Mrs. Dorothy R. Polowick

Mr. James Wilson
Mr. and Mrs. Robert L. Sharp

Miss Mary Wilson
Mr. and Mrs. E. Desmond Lee, Jr.
Mrs. Jane H. Wilson

Betty A. Wolfrom
Mrs. Ethel C. Wolfrom

Margaret Condi Woods
Mr. and Mrs. Stuart M. Mertz

Mrs. Emma Young
Mr. and Mrs. Willis Lemley and Patty

Mr. Cy Zilles
Mrs. Patricia Smith Hogan
Mr. Kenneth S. Smith

Board of Trustees

John H. Biggs
President
Clarence C. Barksdale
Joseph H. Bascom
Rev. Lawrence Biondi, S.J.
William H. T. Bush
Jules D. Campbell
William H. Danforth
Richard K. Gaines
Robert R. Hermann
Rt. Rev. William A. Jones, Jr.
David W. Kemper
Charles F. Knight
Robert E. Kresko
William E. Maritz
James S. McDonnell III
Lucius B. Morse III
Mrs. Fred A. Oberheide
William R. Orthwein, Jr.
Mrs. Vernon W. Piper
Mrs. Lucianna Gladney Ross
Dr. Howard A. Schneiderman
The Hon. Vincent C. Schoemehl, Jr.
Sydney M. Shoenberg, Jr.
Tom K. Smith, Jr.
C. C. Johnson Spink
Mrs. Walter G. Stern
John K. Wallace, Jr.
O. Sage Wightman III

EMERITUS TRUSTEES
Howard F. Baer
Sam'l C. Davis
Dr. Thomas S. Hall
Henry Hitchcock
Anne L. Lehmann
A. Timon Primm III
Louis S. Sachs
Daniel L. Schlafly
Warren M. Shapleigh
Robert Brookings Smith
Harriet Spoehrer
Harry E. Wuertenbaecher, Jr.

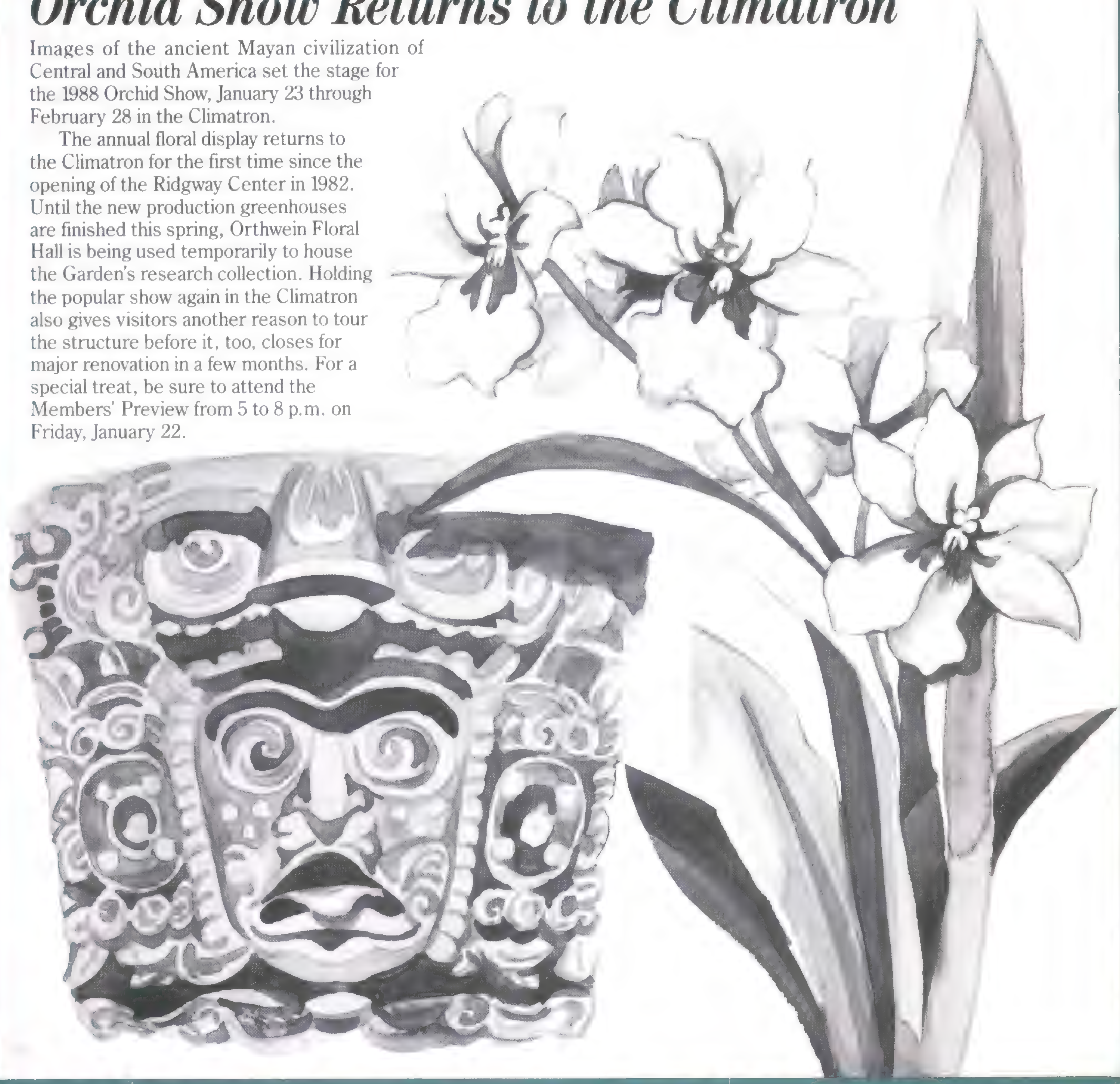
MEMBERS' BOARD
Mrs. Henry W. Dubinsky
President
Mrs. Rudyard K. Rapp
First Vice-president
Ms. Elaine Alexander
Second Vice-president
Mrs. Robert P. Elsperman
Secretary
Frederick H. Atwood III
Treasurer

DIRECTOR
Peter H. Raven

Orchid Show Returns to the Climatron

Images of the ancient Mayan civilization of Central and South America set the stage for the 1988 Orchid Show, January 23 through February 28 in the Climatron.

The annual floral display returns to the Climatron for the first time since the opening of the Ridgway Center in 1982. Until the new production greenhouses are finished this spring, Orthwein Floral Hall is being used temporarily to house the Garden's research collection. Holding the popular show again in the Climatron also gives visitors another reason to tour the structure before it, too, closes for major renovation in a few months. For a special treat, be sure to attend the Members' Preview from 5 to 8 p.m. on Friday, January 22.



MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
P.O. Box 299
Saint Louis, Missouri 63166

SECOND CLASS
POSTAGE
PAID
AT ST. LOUIS, MO

Missouri Botanical Garden Bulletin

ARCH /
PRIL
988

OLUME LXXVI
UMBER TWO

Inside This Issue

3 **Climatron Renovation Begins**
Construction of the Climatron complex begins in March with the reopening scheduled for the fall of 1989.

5 **Report from Panama**
Funding is needed for vital work in the tropics.

8 **Gardening at the Garden**
Learn about six rare, imperiled midwestern plants and what the Garden is doing about them.

12 **Calendar of Events**
Spring is here and the calendar is filled with exciting and fresh activities for all ages.

13 **Ask the Answer Service**
Tips to make your spring garden a winner.

15 **The Fragrance Festival**
The first week of May will be a scentsation at the Garden.

17 **Gardening Techniques**
Practical suggestions for planning your perennial garden.

20 **For Younger Members**
A garden can be a wonderful learning experience for children of all ages.

21 **Tributes**
Friends and family honored with a contribution to the Garden.

On the cover: This young Garden visitor enjoys the return of spring with a frolic in Shapleigh Fountain. —*Photo by Pat Watson.*

The BULLETIN (ISSN 0026-6507) is published bi-monthly by the Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, MO 63110. Second class postage paid at St. Louis, MO. Subscription price $12.00 per year. $15.00 foreign.

The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $35 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Lee B. Fox, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

Looking Ahead

By this time, you may have seen the renovation of the lily pools and walkways in front of the historic former entranceway within the Flora Gate. The walks and the planting beds were broadened and, in the midst of the final stages of the restoration, spring bulbs were planted. The area now offers the perfect setting for the seven bronze Milles sculptures.

By early summer the sculptures should be in place, presenting visitors with a spectacular view. The sculptures will assure an elegance and symmetry far surpassing visitor expectations.

This magnificent setting will not be disturbed when the Climatron construction begins. The Campaign for the Garden has kept to its schedule and is ready to start the much-needed repair and restoration on both the interior and exterior of the Climatron. It will be closed for its extensive face lift, a critical renovative effort caused by the serious deterioration and discoloration of the panes, making it difficult for tropical plants to flourish.

With over two-thirds of the funds raised for the $16 million capital campaign, the Garden will be asking everyone to help raise the remainder of the funds. The St. Louis community has shown marvelous support thus far. As we work together to achieve our fundraising goal, our plans for the Climatron and the Center for Home Gardening will expand the quality and quantity of community services offered to area residents.

Even though the Climatron will be under renovation, the rest of 1988 promises to be an exciting time. The long-anticipated arrival of the Milles pieces, the opening of the first Fragrance Festival (see page 15 for details), our traditional Rose Evenings and a special exhibit of Milles prints will offer wonderful experiences for members and visitors.

Along with the Board of Trustees and the Members' Board, I encourage each of you to enjoy a very special spring and summer 1988.

Peter H. Raven

SUE OERTLI HONORED AT MEMBERS' BOARD MEETING: Sue Oertli (right) was honored at the 1988 annual meeting of the Board for two and a half years of outstanding service as president of the Members' Board. Newly-elected president Ellen Dubinsky (left) presented her with a gift in appreciation of her leadership which made it possible for the Board to accomplish so much during her tenure. Sue will remain on the Board as a past president. During her term the Members' Board increased Garden memberships to nearly 21,000.

CLIMATRON BEGINS RENOVATION

The next time you visit the Garden, you'll be able to admire the Climatron from the outside, but you won't be able to go in. On March 1, the Climatron closes for construction. The award-winning structure is scheduled to reopen in fall 1989.

The recently ended 1988 Orchid Show was, as director of public relations Sue Strommen put it, "the Climatron's last hurrah."

The old Climatron, that is. In 1989, a new improved version will emerge from the surrounding clutter of construction and tired plexiglas.

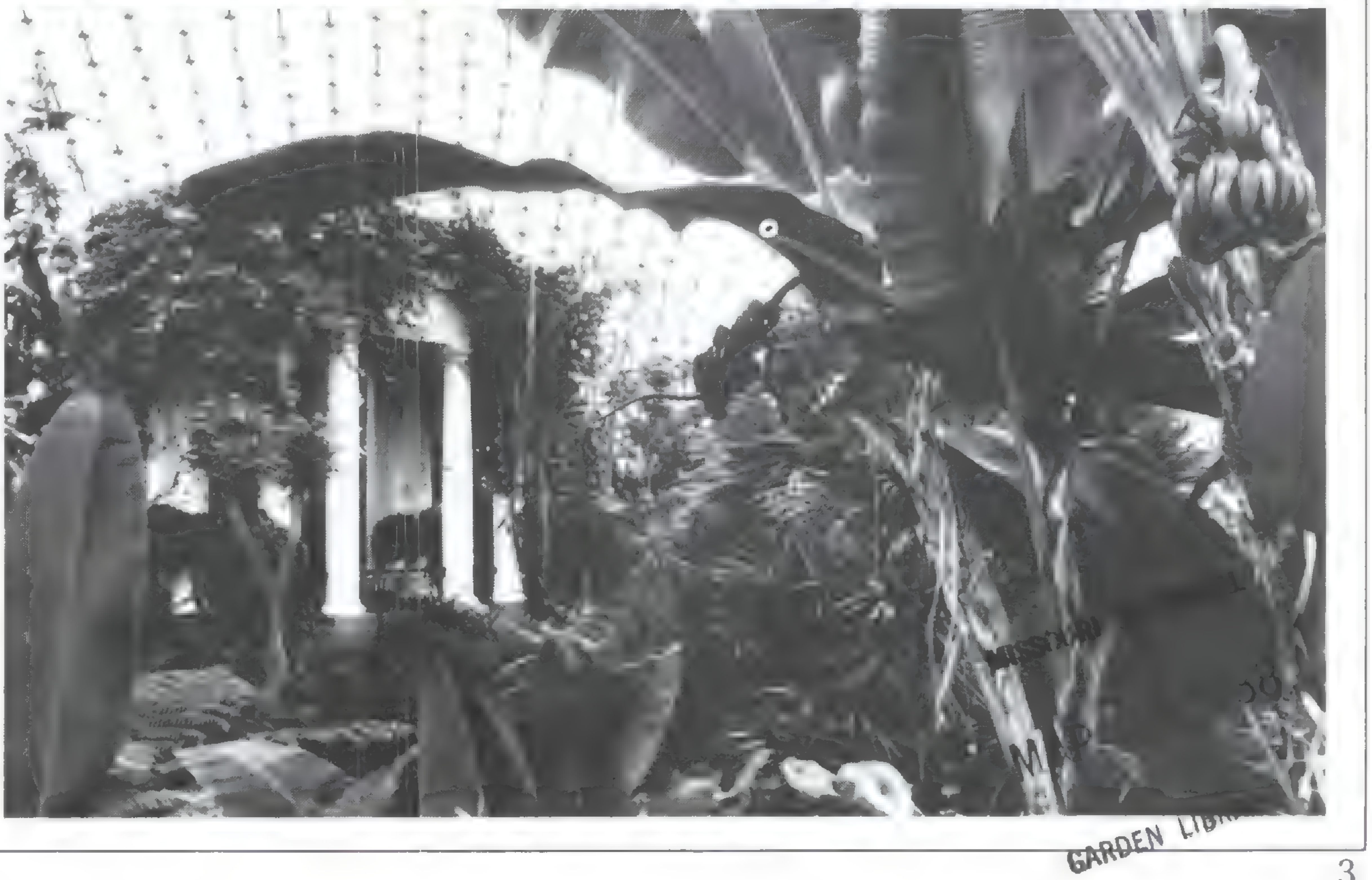
Construction will begin on the dome, replacing the deteriorated panes and reinforcing the structure. At the same time, renovators will begin improvements in the interior. The Mediterranean House will be razed and a new Temperate House will rise on the site.

No Climatron lover needs to worry that the Climatron itself will be altered. Its familiar silhouette will be completely unchanged. The interior of the Climatron —the quality of light, the displays—will be better than ever.

Garden director Peter Raven is looking forward to the day. "It will be the Climatron the way it was always meant to be," he says, "A signature St. Louis landmark in all its glory."

"Believe me," he adds, "It will be worth the wait."

TOP RIGHT: Betty Guarraia, a Garden Guide, leading a school class through the Climatron. The volunteer guides last year served more than 17,000 youth and adults on Garden tours.



BOTTOM RIGHT: The portico now standing in the center of the Climatron is the only feature remaining from the Palm House, a tropical display conservatory which stood on that site from 1917 until 1959. The portico was the Palm House's rear entrance.

GARDEN LIB

The CAMPAIGN for the Garden

UPDATE: New Production Greenhouses Are Completed

As of December 31, 1987, the $16 million Campaign for the Garden had raised $10,734,966 in gifts and pledges. We thank those donors whose generosity helped us reach this very important point in our fundraising progress.

• • •

This March, construction will be finished on three new ranges of production greenhouses, the first tangible project to result from the Campaign for the Garden. The new ranges are dedicated to orchids, special collections (such as chrysanthemums, water lilies, cacti and succulents), and the living research collections (such as asters, irises, and aroids).

According to Alan Godlewski, the Garden's Director of Horticulture, "The primary benefit of these greenhouses is that we will get almost 10,000 square feet more growing space on pretty much the same square footage of land area, thanks to superior layout and benching systems. We can begin to spread out collections that have shared very cramped, crowded space for years. The new houses won't bring about a dramatic difference in horticultural technique—our staff is already using the most modern and effective techniques possible—but they *will* have a dramatic impact on staff efficiency, both physically because of the new layout and also by bringing about a variety of improved plant-culture conditions. The ten separate houses in that old, now-demolished greenhouse complex made even simple passage among them an ordeal. Materials and supplies had to be stored wherever we could find space. Now we have a much better system of passageways between the three ranges and centralized storage."

New rolling "compactor" and step benches are particularly good for promoting efficiency. Made of aluminum, these benching systems significantly increase holding space for plants; they are a vast improvement over the previous, more limited, benches of metal, wood, and concrete added to the old greenhouses through the years. In particular, the compactor benches conserve space that previously would have been dedicated to access aisles by rolling together and apart for limited distances, anchored to tracks in the floor.

The improvements in conditions for plant culture are also dramatic. Climate control systems are now automated to regulate temperatures as precisely as necessary in the ranges' ten separate growing bays. Heating systems around the structures' outside edges prevent "cold spots" from occurring in the winter and help maintain uniform temperatures. In the summer, corrugated pads in the outside walls cool water through evaporation to lower interior temperatures quickly. Centralized misting systems in each house affect moisture levels at the touch of a switch, so staff no longer need to hand-water twice daily.

Three water-amendment systems will help to compensate for the poor quality of St. Louis's water, which is highly alkaline and contains several disadvantageous minerals and other substances. One system will de-ionize the water (basically removing all the harmful elements), another will inject appropriate types and levels of fertilizers, and a third will bring it to the temperature appropriate for the tropical plants being cultivated.

Godlewski concluded, "The end result is that we can grow many more display plants, and show greater diversity in species, with less guesswork and variability. Before, our staff were continually finding ways to compensate for less-than-ideal conditions—in temperature, in what the water was doing to root systems, in how much control we could maintain over plants' blooming periods, and so on. Overall, we have much better control now with much less uncertainty."

Dr. Thomas Croat, one of the Garden's botanical research staff, noted that growing conditions for his particular research family, the aroids, would be much improved. (Aroids are one of the largest, yet also one of the most poorly studied, plant families in the world, including such popular houseplants as philodendron and dieffenbachia.) With increased wall space and catwalk shelving, he will be able to grow more climbing plants and to keep them moister thanks to the range's new misting system. Croat also said, "One particularly important feature is that the research range roof opens to let summer heat escape. This is essential, given that we are growing plants in every available open space, which mimics their multi-level growing patterns in the wild. In the old greenhouse, some of those plants would just fry when the temperature under the roof hit 110 degrees and we couldn't vent off the heat."

Croat's aroid collection, at present being temporarily stored in the Ridgway Center's Orthwein Floral Display Hall, will be moved in mid-April to its own greatly expanded quarters in the third greenhouse range. Also around that time, some conserved plants from the Climatron will move into the new greenhouses for storage over the eighteen-month period of the Climatron's complete renovation.

A FIELD TRIP IN PANAMA / by Greg de Nevers

Rain, Floods and Cloud Forests

EDITOR'S NOTE: Greg de Nevers is currently resident biologist and manager of the California Academy of Science's Pepperwood Ranch Natural Preserve in Santa Rosa, California. From 1983 to 1986 he lived and worked in Panama, spending most of his time in the area of San Blas doing a botanical survey for the Kuna Indians, who wish to establish their entire territory as an internationally recognized nature preserve. While in Panama, Greg developed a particular interest in palms. The Garden was intimately involved with Greg's work. Our office at the Smithsonian Tropical Research Institute in Panama City was his base of operations. Toward the end of his stay in Panama, Greg overlapped with Gordon McPherson, current field director of Missouri Botanical Garden operations there. This story relates the experiences of Greg and Gordon on a short expedition into one of Panama's many isolated and botanically rich but unexplored areas.

Streamsides can serve as rest areas after hours of work in the dark forests, as well as work areas in which to press plant specimens fresh from the field.

WHILE visiting Gordon McPherson at the Garden's field station in Panama two years ago, I decided to explore certain botanical collecting sites in the mountains of western Panama. Gordon and I had heard from a friend, Dr. Richard Cooke, of a very wet forest in the mountains above Bajo Chitra, in Veraguas Province, that particularly interested us.

Richard is a British archeologist with the Smithsonian Tropical Research Institute. A year ago, Richard had learned of a previously unknown rock shelter about eight hours' walk from the village. Richard subsequently excavated it and found the remains of a settled agricultural people who also hunted forest mammals in the area. Of more immediate interest to us, he also found a very wet forest, apparently undisturbed for centuries and bound to contain many interesting and new plant species.

We estimate that moist tropical forests cover about 30% of Panama, many of them remote and largely inaccessible like this site. It is also very clear that there are more new plant species to be found in Panama than in any other country in the New World north of Colombia. From Missouri Botanical Garden collections over the past two to three years, at least 30 new species are now being described, with at least that many more under study by colleagues from other institutions. This is a very high rate of discovery strongly suggesting a wealth of as-yet-unknown species which could yield future sources of food, medicines, and other vital products. We immediately planned an exploratory trip to Cooke's forest.

We met Richard midmorning on January 12, 1986 in Aguadulce. He and his Panamanian wife Jenny drove with us to Chitra to introduce us and help us locate a guide. The area is cut through by a narrow gorge excavated by the Río Gatu. A long series of flat lands and rolling hills gave way to a steep escarpment rising a few thousand feet to a plateau. The plateau continued to incline back through a series of steep canyons and gorges to the base of the *cordillera* (mountain range), where the village of Chitra is situated.

We spent the afternoon driving and walking from one isolated house in Chitra to another, trying to find Gabriel, the man who had led Richard to the particular rock shelter we wanted to see. Upon finding him, we agreed to meet at 8:00 a.m. at a point between our houses, then went back to Chitra and organized our packs for an early departure the next morning.

The next morning dawned still windy and wet. In a place like Chitra, which is down the Pacific slope from the continental divide, one encounters a weather form referred to as *bajarreque*. This is the product of the trade winds of December to March, a continual drippy mist which blows over the divide from the Caribbean, dominating what is generally considered the dry season. In Panama, this maintains their noted mountain "cloud forests," even on low passes across the continental

continued on next page

Clockwise, from top:

A common sight in Panama and the rest of Latin America is the *bohio*, a palm-thatched structure which can serve as either a dwelling or as temporary roadside shelter.

***Calyptrogyne* is a small understory palm common to many wet forest areas of Panama.**

Local guides are usually a necessity when working in the densely forested tropics, because they know the terrain and can often provide information on the local names and uses of plants.

PANAMA (continued)

divide and the foothills of the Caribbean slope. We work at elevations above 1,000 meters in the constant chill of *bajarreque*.

As we set out to meet Gabriel, the *bajarreque* intensified, whipping us with a cold wind and rain. We met our guide at a neighbor's house and heard for the first time that it had been raining in the mountains and that the Río Gatu was high. When we asked how high, they put their hands to their chests. This was a bit disconcerting, but when we asked if we would be able to cross, we were assured that the river was very narrow where we would cross.

So we started out, Gabriel in the lead. We walked through cow pastures and along fence rows for about an hour before beginning to see forest. Walking through cow pastures in the tropics is thoroughly disheartening, as these represent the final stage of deterioration in a once-lush forest landscape. The forests of the tropics rarely stand on fertile soil. Rather, topsoil is pitifully thin, requiring plants to spread out their roots in shallow patterns and to "tie up" nutrients in their tissues rather than allow them to remain unused in the soil. In times past, in order to grow crops, the *campesinos* (farmers) would slash and burn several acres, crop them for two or three years (after which time the nutrients were exhausted), then leave them fallow for five to seven years. Second growth was then cut, and the fields were burned and planted again. This traditional system allowed the fields to regain their fertility for further planting, but the harsh realities of modern economics have undermined traditional practices through the widespread introduction of cattle ranching. Economic pressures on the *campesinos* don't allow them to leave land fallow for any length of time, and they are usually forced to sell their exhausted agricultural plots as pastureland to wealthy ranchers. Over several more years, grazing continues to degrade the soil until it cannot support even this activity and becomes truly worthless and nonrenewable. This destructive spiral or similar patterns are, unfortunately, commonplace in Latin countries and have resulted in the loss of major tracts of once-abundant growth, along with many thousands of species of plants, animals, birds, insects, and other organisms. As I said, speaking as a scientist and a conservationist, walking through cow pastures in the tropics is thoroughly disheartening.

After an hour or so, we began passing through second growth and patches of remnant forest. We passed a couple of simple huts, called *bohios*, and crossed a couple of small creeks, the water coming to our knees. Passing below a hill where Gabriel knew of another *bohio*, we decided to explore on from there without our packs and began walking up a trail that soon led us into the forest. As this was newly discovered territory for us, Gordon immediately started finding interesting things to collect and slowed his pace. I was looking for a certain palm, which I hadn't seen but which I thought I would find by continuing up the trail, so we decided to split up. Gabriel and I continued on and Gordon followed slowly, collecting as he went.

After an hour or so, Gabriel and I began to hear a distinct roar. We were nearing the river. I began to feel apprehensive about what the crossing would be like, but when we finally came to it I knew there would be no problem—there was no chance of crossing. The river was a raging torrent, foaming and frothing along, more than ten meters wide and certainly two meters deep. Gabriel showed me a rock on the bank, about 1.5 meters (or 5 feet) tall, then pointed a few feet away into the foaming water, where there was another rock, bigger than this, completely buried. He laughed and talked as though we had known all along that it would be impossible to cross. I chalked it up to a cross-cultural miscommunication.

We followed the trail for another half-hour along the river to where the cliffs on our right jutted out into the river on our left and we could go no farther. How disappointing to find no place at which to ford! It had been pouring rain ever since we left our packs at the little hillside *bohio*. We were soaked, water was streaming down everywhere. We had to call it a day. I asked Gabriel what a man earned per day in the area. He said earnings ranged from three dollars per day to work with a machete on the *fincas* (plantations) to ten dollars per day during the sugar cane cutting season, when wages are paid by the ton cut. (As a point of interest, Panamanian and United States dollars are the same currency.) We agreed on five dollars for his walking around in the rain with us and Gabriel started home to dry out.

I started back slowly, looking for palms. I found two interesting ones, *Catoblastus* and an undescribed species of *Pholidostachys*, both of which I knew from my work in the area of San Blas. While the *Pholidostachys* has been lately collected in limited quantities in Panama, the *Catoblastus* is reported in the literature only from Colombia and Equador, although a few people have found it in eastern Panama in recent years. This is the first instance I knew of it in western Panama, and it greatly piqued my desire to get to that forest. Although we had been turned back by the river, what I had already seen convinced me that we had been led to a very interesting, botanically rich site.

Gordon had gotten ahead of me on the trail back to our packs and ended up taking a different route. When he arrived at the *bohio* he looked a bit worried and wondered if we would be able to cross the "little creek" down the hill on our return to Chitra. I couldn't believe the creek could have risen enough to impede us, but Gordon convinced me that we ought to test it before heading back with our packs. We walked down to the creek and I marched straightaway into the current. I quickly slowed down. The creek had indeed risen and now had a formidable current. I was still confident we could cross and continued out into the rush of the water. At a certain point I felt myself unable to resist the current any longer and knew that I was about to be swept away. I dove headlong back toward the bank where Gordon still stood, pulling myself ashore on a rock. We knew we had to stay the night in the *bohio*.

Bohios are a fixture in Panama. They are essentially smaller, cruder versions of the permanent houses people build. One finds them anywhere people travel with regularity, for instance, at agricultural plots, along distant hunting trails, and associated with various other resource or harvest areas. Ours consisted of a wooden frame, an A-frame roof thatched with sedges (a tufted marsh plant), walls of split palm trunks and a sleeping loft, the floor of which was also of split palm trunks. Most *bohios* I've seen are thatched with palm leaves; this roof of sedges was new to my experience. Palm leaves are normally split down the rachis (the plant's "spine") and arranged with the rachis perpendicular to the fall line of the roof and the pinnae, or featherlike leaflets, parallel to the fall line. The leaves are laid from the lowest roof point to the highest, so that a thick mat is built up which sheds water nicely. I assumed sedges had been used on this *bohio* because the surrounding land was noticeably lacking in palms, probably because they had all been cut long ago to clear land for planting. The only palms around were a few clumps of *Euterpe panamensis*, of which the walls were made. Thus, the use of sedges for thatch reflected resource scarcity in the area, as well as native resourcefulness in response.

Gordon and I pressed our day's collections until it got dark, then built a fire, cooked our dinner, and attempted to dry our feet. We retired to our sleeping loft early. The loft was only about seven feet wide, which put our heads and feet close to contact with the pitch of the roof and let us monitor all too well the rain falling on the other side of the thatch six inches or so from our heads. We found ourselves hemmed in by a pair of drips, one near Gordon's left shoulder and one just off my right hip. We spent much of the night sleeping fitfully, listening to the rain, trying to gauge if it was slackening, and feeling the *bohio* sway in the wind.

The rain did in fact slack off during the night, the creek went down, and we returned to Chitra the next morning without further mishap, although also without the botanical treasures we had hoped to find. ■

Atlantic Ocean
Panama Canal
Pacific Ocean
NORTH

Please Help Support Our Panama Program

The Missouri Botanical Garden has maintained a field station for staff botanists collecting specimens in Panama since 1922. Decades of continuous work there have resulted in the Garden's having the world's most extensive and historically representative collection of Panamanian specimens, widely studied by scientists from other institutions. Eighty percent of all current collections in the country are made by Garden staff, and it is estimated that many thousands more plant species are yet to be discovered. Our field station there and its resident director ensure that scientific colleagues from other institutions have a base for their work.

In addition, Garden staff serve the important role of consultants to the Panamanian people, both in identifying local plants and in helping to devise strategies for better resource management and conservation. The Garden has provided training in St. Louis for a number of Panamanian university and post-graduate students. It is clear that most of the present progress in conservation and discovery of new species would end if the Garden's field station were to close.

For several years, the National Science Foundation supported our field work in Panama, including the publication of a definitive flora (encyclopedia of plants) of Panama representing work over the period 1943-81. More remains to be done, however. The Garden is seeking additional outside funding for its Panama projects, including the field station and support for the resident director. The National Geographic Society will provide for some of these expenses. The Garden also invites support from private sources. Contributions to the Panama program from Garden members will be gratefully accepted. For further information, please call the Development Office at (314) 557-5120.

Will They Vanish?

Possibly Not—An Update on Protecting Imperiled Plants at the Garden

In recent years there has been a new concern about rare species worldwide and the growing realization that even in the Midwestern United States there are species that may become extinct while we watch (or fail to watch). The good news is that somebody cares. In fact, an encouraging surprise has been the energetic assortment of private citizens, organizations, government agencies, and biologists who care very much. This, however, is no guarantee of a happy outcome.

Conservation has long been a goal of the Missouri Botanical Garden. Part of the Garden's reaction to the plights of local species is participation since 1985 in The Center for Plant Conservation, a national organization of botanical institutions cooperating in backing up wild populations through protective cultivation. The project was introduced in the May/June 1986 *Bulletin*. Eleven Midwestern species have emerged as especially jeopardized and now reside at the Garden and Shaw Arboretum, if only as seeds or seedlings. Certain species are already on display or will be displayed in this growing season. Most are gaining strength out of sight but will be displayed when mature. When ample seeds are available from the wild or through cultivation, they are placed in long-term cold storage in a federal seed bank. Next year and in the future, additional species will follow the first group. The stories of six species are told below, and others will appear in future *Bulletin*s.

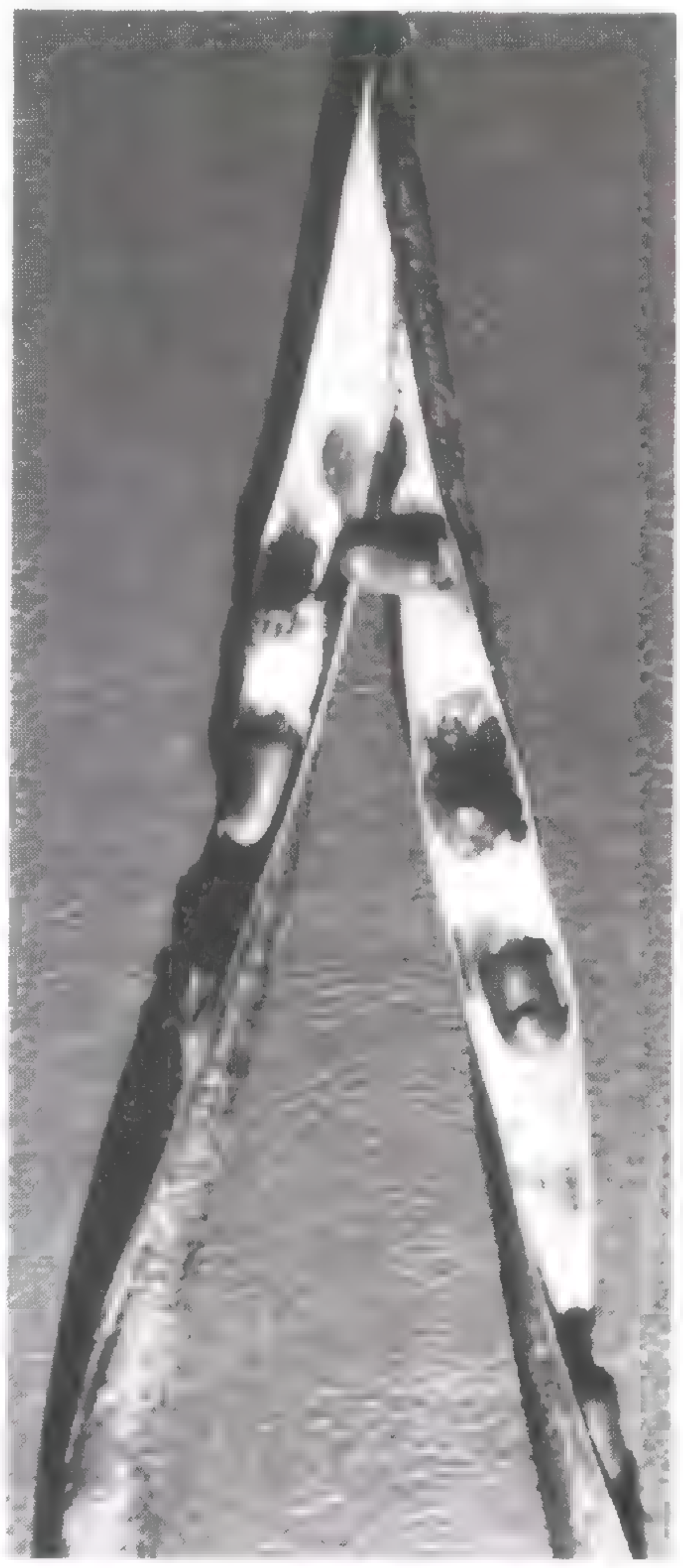
***1) Price's Groundnut** (Apios priceana).* This rambunctious twining vine is a member of the bean family and produces a beanlike flower and beanlike pod which opens by means of the two halves curling apart as they dry. Price's Groundnut inhabits thin woods on poor, limestone-based soils in Alabama, Kentucky, Mississippi, Tennessee, and (no longer?) Illinois. The seeds at the Garden came from Mississippi not far from the birthplace of Elvis Presley. About the size of a tennis court, the patch at that location is clinging to an eroding hillside between a new home and a highway and survived construction and landscaping of the home. It seems that the owner of the home, who participated in gathering the seeds, is enthusiastic about protecting such a special species. My host in visiting the site, Dr. Edward Croom from the University of Mississippi, recently discovered an unusually effective plant-derived antimalarial drug and is studying *Apios priceana* chemically with an eye on its potential as a commercial starch source (so far, not terribly promising). The starch is produced in potato-like tubers. The plants die back each cold season which allows them to survive fires. As I write this, our seeds are beginning to sprout.

There is an odd rare-species coincidence (or is it not 100% coincidence?) connected with Dr. Croom. He is related to the southern botanist and lawyer Hardy Bryan Croom, who perished long ago in a shipwreck. The earlier Croom is commemorated by *Croomia pauciflora*, itself a seriously endangered southern species, which could wind up under the protection of the Center for Plant Conservation.

2) Small Rock Cress (*Arabis perstellata* variety *perstellata*). A member of the mustard family, the *Arabis perstellata* variety *perstellata* germinates in the autumn and forms rosettes in the spring, followed by flowering stalks, fruits, and seeds, all typically before the first of June. It then dies back and overwinters as an often purplish tuft of leaves. The few living populations occupy just four counties in Kentucky and Alabama in the drainage of the Kentucky River. Small Rock Cress appears to be somewhat picky about its habitat, which is disappearing. Most often the cress inhabits steep, shaded slopes on small rock outcrops or bare, disturbed soil. It does not tolerate full sun, drying, or competition from other species. The Garden obtained seeds from Kentucky biologist Hal Bryan, who was aware of our efforts and who had the opportunity to salvage the seeds from the path of road expansion.

3) Boltonia decurrens (has no common name). So far the most horticulturally successful addition to the program, *Boltonia decurrens*, a member of the aster family, asserted itself last summer in the Shaw Arboretum and in the Rock Garden. It should be spectacular again this summer with frilly white to light pink flower heads. Despite its vigor in the garden, *Boltonia decurrens* is dwindling in the wild, now down to about eight known stands. All of these inhabit the bottomlands along the Illinois River, except for two populations near the mouth of the Missouri River and another near the Cahokia Indian Mounds east of St. Louis. My guide in gathering seeds of *Boltonia decurrens* was Alan Brant, botanist at the Garden and one discoverer of the populations near St. Louis. The future of this species is clouded by pollution, herbicides, changed flooding regimes, and agricultural practices.

4) Calamagrostis insperata (has no common name). A handsome grass with a deep bluish green color, this species once was at home in Missouri and in Ohio. It has not been seen in Missouri since the 1930s despite attempts to relocate it. Presently it is found at just two sites in southern Ohio. On the brink of disaster, one of the populations is a



Open seedpod from *Apios priceana*.

◀ **Flowering head from *Boltonia decurrens*.**

tiny patch of turf hanging over the edge of a cliff in a defoliated power cut. The other population is much larger, but on privately owned land that could be cleared. The strongest growth of the *Calamagrostis* at the latter site is in soil disturbed by road graders. This may sound surprising, but many rare species are healthiest on disturbed soil. Accompanying me to bring a clump of this into cultivation were biologists Allison Cusick and Jim Burns from the Ohio state government. They are monitoring the situation closely, which offers some comfort. The plants they helped transplant are thriving in pots at the Garden.

5) Tennessee Coneflower (*Echinacea tennesseensis*). The Tennessee Coneflower is probably the best-known species in the program. Its membership is in the aster family along with the familiar purple and pale coneflowers. Its dazzling bright reddish/pinkish flowering heads give it commercial value. From a conservation standpoint, the problem with saving the species as a garden flower is that it hybridizes with other species and is being lost through genetic contamination. In the wild, it is found only in three counties in central Tennessee on about four open sites ominously close to Nashville's sprawl. Tennessee Coneflower was probably once more common but was harvested, as were other echinaceas, to be used medicinally as a cure-all called "echinacea roots." Tennessee biologist Paul Somers is heading a program to preserve the Tennessee Coneflower, and our work on it is a component of his program. So far, it has not been cooperative horticulturally here, but we will persevere.

6) Lucy Braun's Eupatorium (*Eupatorium luciae-brauniae*). Named for Cincinnati botanist Emma Lucy Braun, this representative of the aster family is related to several familiar weeds belonging to the genus *Eupatorium*: thoroughworts, boneset, and white snakeroot. When eaten by cows, the last-mentioned (*E. rugosum*) was the Midwestern source of the deadly milk sickness, which plagued early settlers, virtually wiped out Pigeon Creek, Indiana, and killed Abraham Lincoln's mother, Nancy Hanks. *Eupatorium luciae-brauniae* is a shy member of the genus, living under rock overhangs in eastern Kentucky and north-central Tennessee. Its greatest immediate threat comes from hikers and rock climbers lured to the sites by their beauty and who would not knowingly damage an endangered species. Clearly this is a case in which education can supplement other preservational techniques. A second threat is lumbering, not just at the sites of the *Eupatorium*, but also at a distance, since erosion follows the lumbering, and silt from the erosion covers *Eupatorium luciae-brauniae* in stream bottoms. Collaborators with the Garden in protecting this rarity, along with the Missouri Bladderpod and Short's Goldenrod, are biologists Jerry and Carol Baskin at the University of Kentucky. Their research is in part devoted to the ecology of rare species.

Fortunately, the Garden is not in this alone. There has been help of every possible form each step of the way. Individuals and groups in addition to all mentioned above are instrumental in moving the program forward. Mrs. William Bush has been a lively collaborator, lending a hand often, particularly by connecting the Center for Plant Conservation project with the Garden Club of America. Support, interest, and encouragement from chapters of this organization nearby and as far away as the Westport Garden Club of Kansas City have been crucial. We couldn't grow the plants without the enthusiasm and ample talents of plant propagator David Wright at the Garden and Joyce Davit at Shaw Arboretum.

—George Rogers, Ph.D.

One of the two known populations of *Calamagrostis insperata*, perched on the edge of a cliff in an Ohio power cut. Left: looking up the face of the cliff to the overhanging *Calamagrostis*.

Center: the same clump looking toward the cliff from above. Right: taken from the same spot as the middle photo but looking in the opposite direction.

Ask the Answer Service

Getting Ready for Spring

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at ***577-5143.***

Q. Last year my crabapple suffered from fireblight. Do I need to apply a dormant oil spray to control that? If so, when?

A. Fireblight is a bacterial disease that can be quite damaging to susceptible selections. Dormant oil sprays are used to kill overwintering insects or insect eggs on plant bark. They should be applied while your crabapple is still dormant and before leaf or flower buds open. However, oil sprays will not be effective against fireblight. The most effective chemical control is the use of the antibiotic streptomycin. This is sold under the names of Agristrep or Agrimycin. It should be applied before buds open and repeated at intervals of 5 to 7 days until the end of bloom. Complete directions for safe use are on the label. If the infected twigs have not already been pruned off, this should be done before applying any sprays. Make cuts at least 8 to 12 inches below infected wood. Oddly, fireblight can be most severe on vigorously growing trees so take care not to overstimulate your crabapple with excess nitrogen fertilizers.

Q. Last spring I thoroughly enjoyed the Crown Imperial Fritillary at the Garden. Mine began to grow but abruptly died. I think they might have been killed by frost. What should I have done to protect them?

A. Your memory is likely correct as we did have a hard freeze last spring about the time *Fritillaria* was growing. While the Crown Imperial (*Fritillaria imperialis*) will grow here in St. Louis, it is not quite as hardy as the more common spring bulbs such as tulips, hyacinths and daffodils. Our variable weather sometimes makes cardboard boxes, plastic buckets, glass jars and recycled milk cartons necessary garden tools. When hard freezes threaten, cover your plants overnight but remove the covers on sunny days to prevent overheating and consequent damage.

Q. Now that my bulbs are up and growing, is this the time to apply bone meal?

A. Bone meal is a most valuable organic source of phosphorous, but by itself is an incomplete fertilizer. If bulbs remain in the same site for several years, better growth will result from supplementary feeding of a complete fertilizer containing nitrogen, phosphorous and potassium. Products such as 5-10-5, Holland Bulb Booster and MagAmp will provide all these nutrients. The best time to apply these fertilizers is when the shoots appear. A second application may also be applied after blooming, while leaves are still green.

Q. My lawn has been plagued for several years with crabgrass and nothing I do seems to work. Please advise.

A. Crabgrasses are annual weeds that grow from seed every year. Seeds begin germination as soon as soils have warmed, so it is most important to use a pre-emergent herbicide and apply it before germination begins. Granular formulations put down sometime between mid-March and mid-April give best control. Several products are available under various trade names. University of Missouri Cooperative Extension Service bulletin number 6750 "Lawn and Turf Weed Control" gives complete information for the control of crabgrass and other lawn weeds and is available from local Extension offices.

Q. I'd like to get my vegetable garden off to a good start this year. I know many plants have to grow in cool weather but how do I know I'm not starting too soon?

A. Before any planting begins in the garden, the soil must be in a workable state. If a handful of soil remains in a moist ball after it is squeezed, it is too wet to work. Workable soil crumbles easily. Till or loosen the soil to a depth of 7 or 8 inches. Incorporate liberal amounts of compost, aged manure or peat moss. As soon as the soil is ready, crops such as peas, turnips and onions (sets or seedlings) may be planted first. Beets, carrots, leeks, lettuce, radishes and spinach are planted next. An easy way to tell when to plant these crops is to use a soil thermometer and plant when the soil temperature reaches 40°.

Q. Several plants in my perennial border are beginning to crowd each other. Is spring a good time to divide and transplant?

A. Many perennials may be lifted and divided easily in the spring and this is best done for plants that bloom in summer and fall. Spring-blooming perennials are better divided in the early fall. Division should be finished before the new shoots have grown much. If the new growth reaches 5 inches or more, success becomes less sure. When dividing old clumps, discard the old, worn-out center portions and replant only the new, vigorous outer sections. Top dress your perennial border at this time with a handful of 5-10-5 fertilizer sprinkled around each clump. Lightly cultivate to incorporate the fertilizer.

TIMELY TIPS:

- Plant and transplant trees and shrubs before new growth begins.
- Begin spring cleanup. Remove winter mulch from shrubs and perennials and add to compost piles.
- Mulch should not be removed from azaleas and rhododendrons.
- Start seedlings of broccoli, cabbage and cauliflower 4 to 6 weeks before planting outside by mid-April.
- Plant dormant mail-order roses as soon as they arrive. Mulch well to conserve moisture and prevent damage from late freezes.
- Dormant mail-order plants that arrive before soil can be worked must be "heeled-in" in temporary quarters and planted in permanent sites as soon as soil conditions permit.

—Chip Tynan, The Answer Service

Don't miss Chip on the KXOK Garden Show (AM 630) each Saturday from 8 to 9 a.m.

MARCH-APRIL

COURSES & LECTURES

AT THE GARDEN

NOTE: Class descriptions and registration information for spring courses can be found in the *1988 Spring Courses and Lectures* brochure which was mailed to all Members recently. For more information call the Education Division at 577-5140.

MARCH

1 (Tu)	Dwarf Evergreens
	Shrubs, Species & "Old" Roses
	Planting & Pruning Roses
2 (W)	Ornamental Shrubs *(2 sessions)*
5 (Sa)	Who Eats Whom
	Organic Vegetable Gardening
6 (Su)	Chinese Brush Painting *(6 sessions)*
7 (M)	Gardening Techniques *(6 sessions)*
	Critical Issues Forum *(5 sessions)*
8 (Tu)	Vegetable Gardening *(2 sessions)*
	Hostas & Companion Plants for the Shade
9 (W)	The World of Annuals
10 (Th)	Best Vegetable Varieties for St. Louis
	Perennial Garden Design *(3 sessions)*
12 (Sa)	The Plant Doctor
	Planting for Success
	Composting Workshop
15 (Tu)	Training & Pruning Fruit Trees
16 (W)	Basics of Floral Design *(3 sessions)*
	Boxwood Lecture
22 (Tu)	Raising Missouri Wildflowers
	Selecting & Growing Flowers for Drying
	Home Fruit Culture
23 (W)	Trees for St. Louis Gardens
26 (Sa)	Sketching Opportunities in the Plant Collections
29 (Tu)	Summer Bulbs
	Growing & Using Herbs *(3 sessions)*
30 (W)	Growing Small Fruits
31 (Th)	Small Ornamental Trees

APRIL

4 (M)	Nature Photography *(5 sessions)*
	Garden Weed Control
	Plants for a Japanese Style Garden
5 (Tu)	Pruning Indoor Plants
6 (W)	The Perennial Garden *(3 sessions)*
7 (Th)	Planting for Privacy & Screening
	Selection & Use of Garden Pesticides
9 (Sa)	Birds of a Feather
12 (Tu)	Basics of Birding *(5 sessions)*
13 (W)	Intermediate Floral Design *(3 sessions)*
14 (Th)	Gardening with Peonies & Daylilies
	Garden Weed Control
	Plants for a Japanese Style Garden
17 (Su)	Hari-e—Japanese Torn Paper Pictures
18 (M)	Waterlilies
19 (Tu)	Thai Cuisine *(2 sessions)*
21 (Th)	Ornamental Grasses
	Planting to Attract Birds & Butterflies *(2 sessions)*
23 (Sa)	Pruning Ornamental Shrubs
25 (M)	Aquatic Gardening
28 (Th)	Garden Features & Lighting
30 (Sa)	Discover the Garden

AT THE ARBORETUM

MARCH

4 (F)	Nocturnal Awareness Hike
5 (Sa)	Maple Syrup
25 (F)	Nocturnal Awareness Hike

APRIL

1 (F)	Nocturnal Awareness Hike
5 (Tu)	Spring Wildflower Walk
9 (Sa)	Do You Liken the Lichen?
12 (Tu)	Spring Wildflower Walk
16 (Sa)	Wildflower Walk with Edgar Denison
19 (Tu)	Spring Wildflower Walk
22 (F)	Nocturnal Awareness Hike
23 (Sa)	Saturday Afternoon Wildflower Walk
26 (Tu)	Spring Wildflower Walk

BOARD OF TRUSTEES ANNUAL MEETING HELD

O. Sage Wightman, Robert Brookings Smith, Peter H. Raven.

The Garden's Board of Trustees held its annual meeting on January 20, 1988. Mr. O. Sage Wightman and Mr. John K. Wallace were elected as life trustees.

Two new term trustees were elected, Mr. Gerald D. Blatherwick, vice chairman of human resources and corporate communications at Southwestern Bell, and Mr. Stephen F. Brauer, president of Hunter Engineering Co., and Mrs. Vernon W. Piper and Mrs. Fred A. Oberheide were re-elected to a term.

Garden Emeritus Trustees elected included Mr. Clarence C. Barksdale, Mr. Joseph F. Ruwitch and Mr. Tom K. Smith, Jr.

Mr. John H. Biggs was re-elected as president for 1988. Other officers are: Mr. Robert E. Kresko, first vice president; Mr. O. Sage Wightman III, second vice president; Mr. Charles W. Orner, secretary; and Ms. Cheryl B. Mill, assistant secretary.

Mr. Robert Brookings Smith, an Emeritus Trustee, was honored for 30 years of continuing service on the Board. Dr. Raven and Mr. Wightman presented him with a gift in appreciation for his outstanding service.

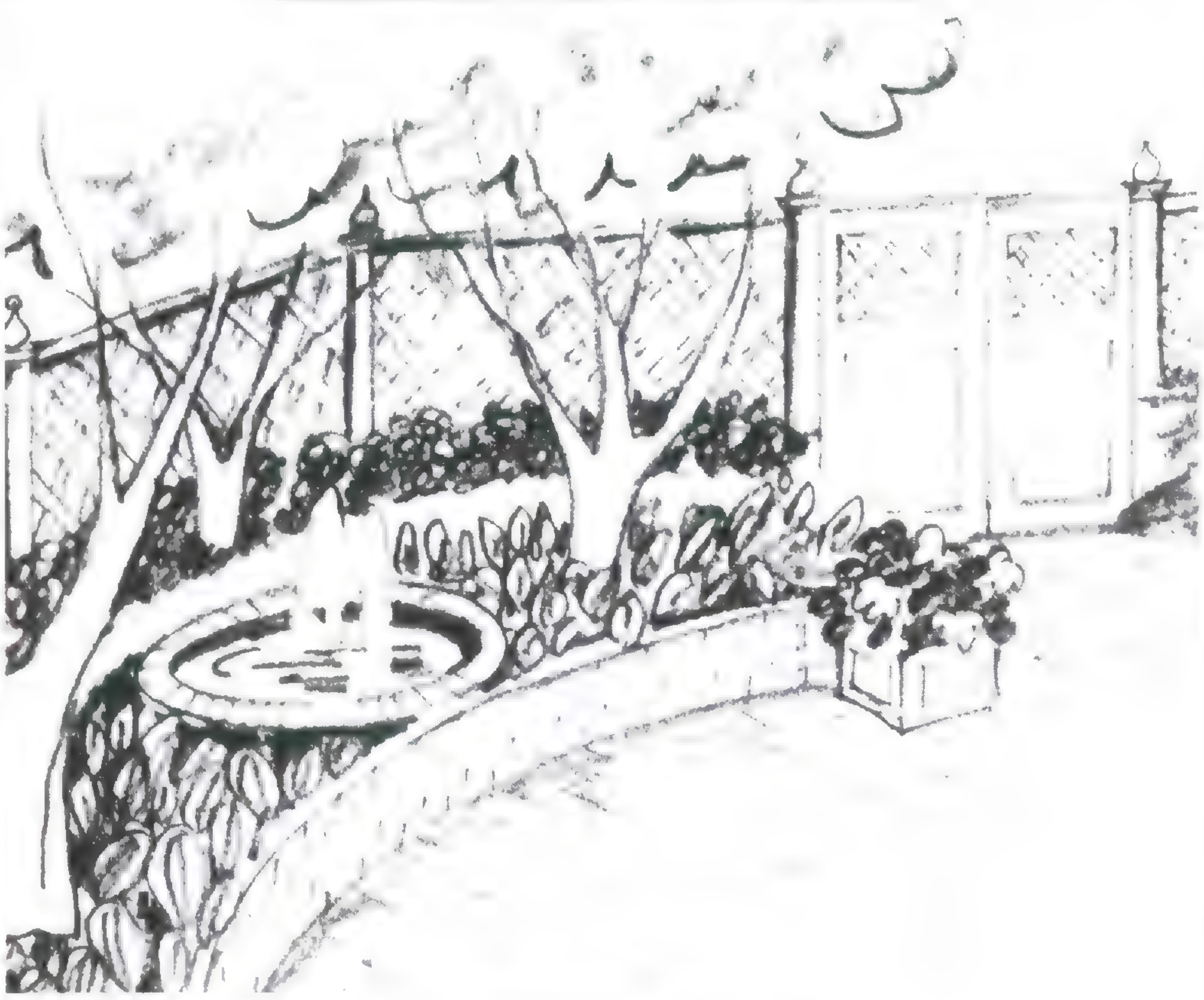
Wheelchair Donated

Mr. and Mrs. Frank V. Becklean, Jr. recently donated a new wheelchair to the Garden in memory of Mrs. Becklean's mother, Louise Droit. The Beckleans were responding to the appeal in the last issue of the *Bulletin* for wheelchairs, new or used, in good working condition. The Garden provides wheelchairs as a courtesy to visitors who need them. If you are interested in donating a wheelchair, please call Judy Luebbert at 577-5144.

Missouri Botanical Garden

CALENDAR OF EVENTS

March-April 1988



MARCH 2, 9 & 16 / WEDNESDAYS

"Gardening by Design" Lecture Series

Final three lectures of a series of six, by experts on gardening subjects. Single tickets are available at the door the day of the lecture if the series is not sold out; call 577-5125 for ticket availability. $4 Members, $5 non-members. *See March 2, 9 and 16.*

MARCH 1-13 / EXHIBIT

"Reflections of Nature"

9 a.m. to 5 p.m. daily, Ridgway Center. Exhibit of nature paintings by well-known wildlife artist Robert Bateman. Free. Financial assistance for this exhibit has been provided, in part, by the Missouri Arts Council, a state agency, and Mill Pond Press, Inc.

MARCH

1 TUESDAY

Tuesday Walking Tour

1 p.m. Meet at Ridgway Center ticket counter rain or shine. Enjoy the Garden with a guided tour of the grounds led by Garden Guides. Free.

2 WEDNESDAY

Gardening By Design

1 & 8 p.m., Shoenberg Auditorium. Roger B. Swain, Science Editor for *Horticulture* magazine, lectures on "Gardening With Vegetables and Small Fruits." *See Highlight.*

3 THURSDAY

Members' Garden Lecture

11 a.m. & 7 p.m., Shoenberg Auditorium. Lecture by Brian Ward on "The Forever Blooming Garden."

6 SUNDAY

Walking Tour

2 p.m. Meet at Ridgway Center ticket counter. Enjoy the Garden with a guided tour of the grounds led by Garden Guides. Free. Call 577-5140 for reservations.

7 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. On-the-spot identification of indoor plants and diagnosis of their insect, disease and cultural problems. Free. Staffed by Missouri Botanical Garden-Missouri Extension Service Master Gardeners.

8 TUESDAY

Tuesday Walking Tour

Please see March 1 for details.

9 WEDNESDAY

Gardening By Design

1 & 8 p.m., Shoenberg Auditorium. Gary Custis, Regional Technical Manager, Chemlawn Services Corporation, lectures on "Turf Grasses & Other Ground Covers." *See Highlight.*

15 TUESDAY

Tuesday Walking Tour

Please see March 1 for details.

16 WEDNESDAY

Gardening By Design

1 & 8 p.m., Shoenberg Auditorium. Marco Polo Stufano, Director of Horticulture at Wave Hill in Bronx, New York, lectures on "The Flower Garden." *See Highlight.*

21 MONDAY

Plant Clinic

Please see March 7 for details.

22 TUESDAY

Tuesday Walking Tour

Please see March 1 for details.

25 FRIDAY

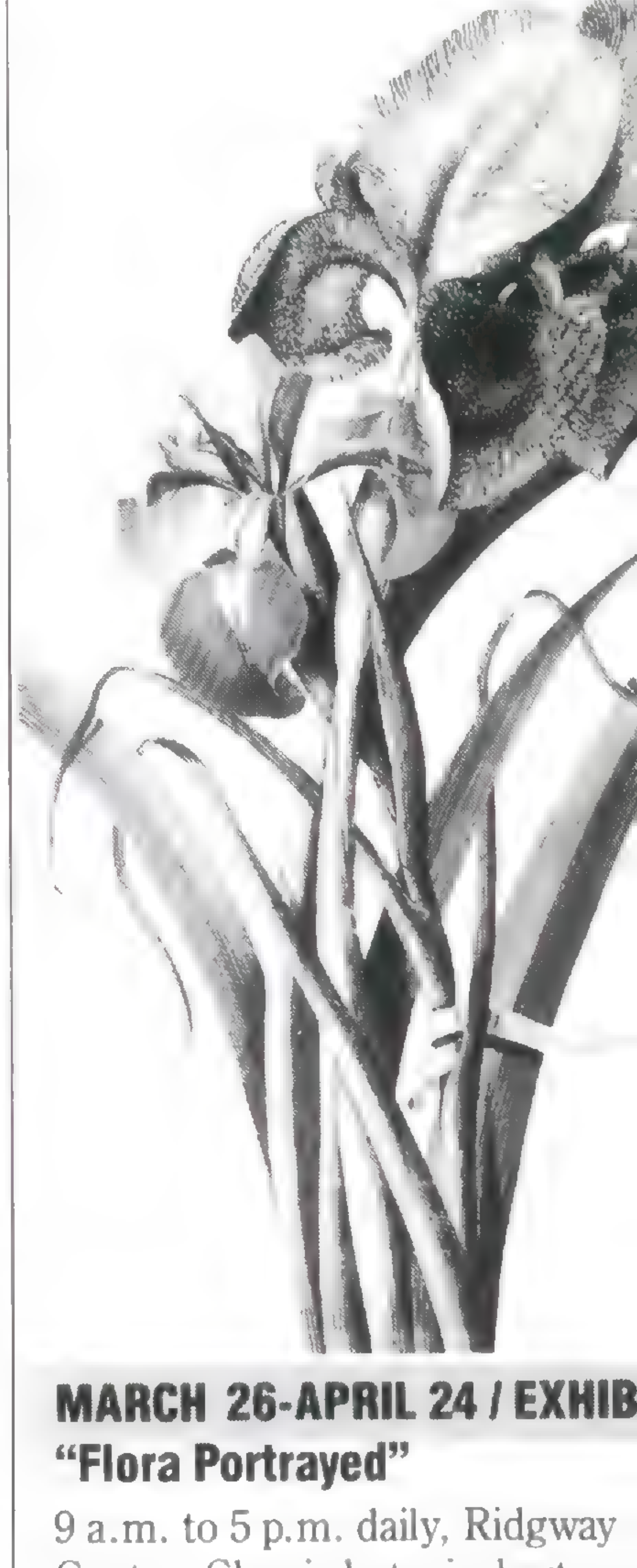
Members' Preview of "Flora Portrayed" and "Best of Missouri Hands"

5 p.m. to 8 p.m., Monsanto Hall.
beautiful exhibit of botanical illust
tions dating from 530 A.D. to the
present from the art collection of
the Hunt Institute for Botanical
Documentation. Funded by the
Missouri Arts Council, a state
agency. *See March 26-27, below.*

26-27 SAT. & SUN

"Best of Missouri Hands"

9 a.m. to 5 p.m. daily, Ridgway C
ter. Display, demonstration and s
of crafts by artisans from Missou



MARCH 26-APRIL 24 / EXHIB

"Flora Portrayed"

9 a.m. to 5 p.m. daily, Ridgway Center. Classic botanical art on
display from the Hunt Institute f
Botanical Documentation. Free.

29 TUESDAY

Tuesday Walking Tour

Please see March 1 for details.

APRIL

–24 FRI.-SUN.

lora Portrayed”

.m. to 5 p.m. daily, Ridgway nter. Classic botanical art on play from the Hunt Institute for tanical Documentation. Free.

SUNDAY

lking Tour

.m. Meet at Ridgway Center ket counter. Enjoy the Garden th a guided tour of the grounds ed by Garden Guides. Free. Call 577-5140 for reservations.

TUESDAY

esday Walking Tour

m. Meet at Ridgway Center et counter rain or shine. Enjoy Garden with a guided tour of the unds led by Garden Guides. Free.

TUESDAY

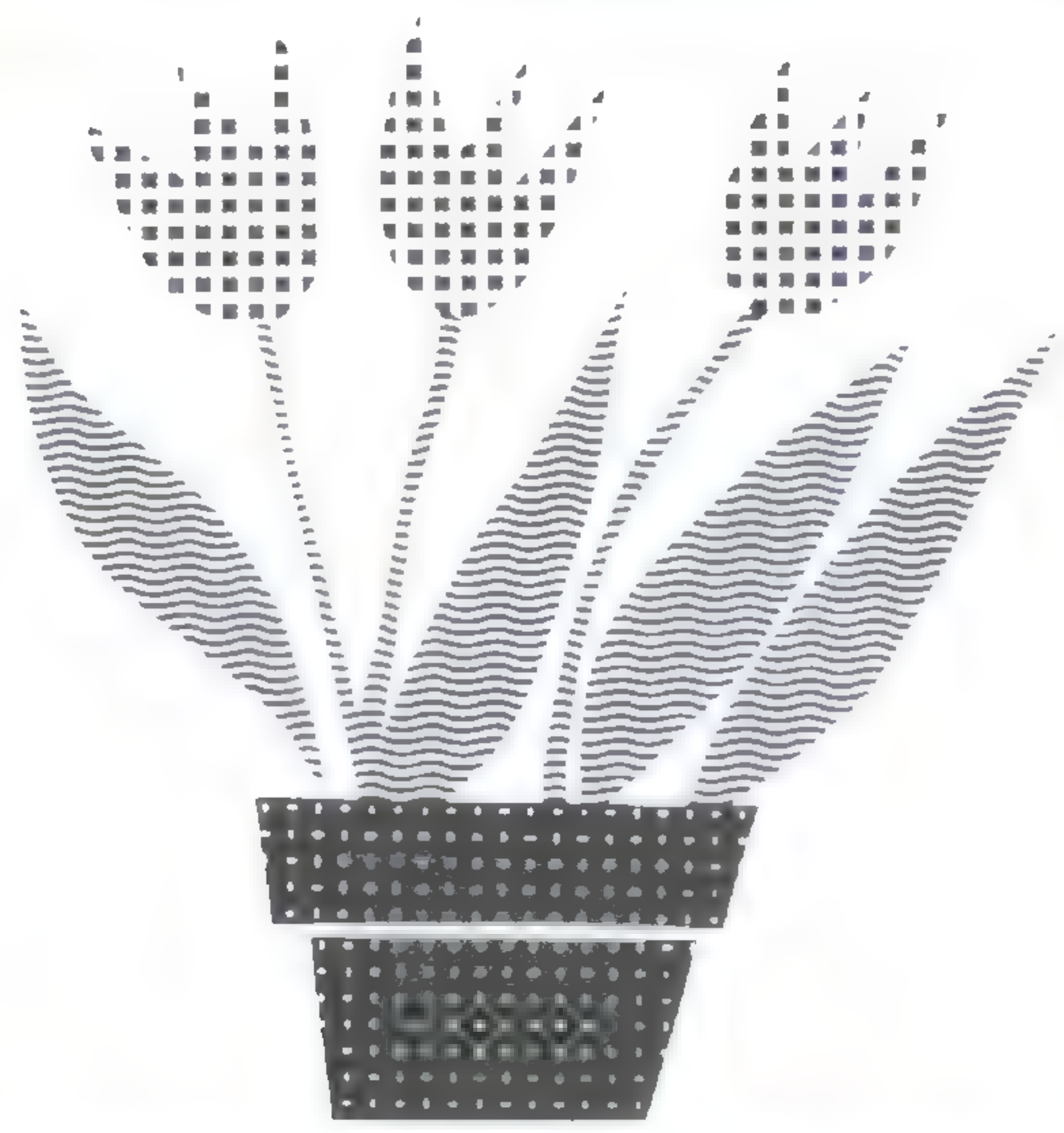
ing Lecture Series

) & 7:30 p.m., Shoenberg litorium. Kick off for lecture es with a theme of “The Face Cultural Tradition in a Modern rld.” Today's lecturer is Paula nis, Garden Guide, whose ure is titled “Japan—A Land of ntrasts.” Others are April 12, 19 6. Free. Sponsored by the den's education division.

APRIL 9 / SATURDAY

Members' Arbor Day Celebration

11 a.m.-2:30 p.m. Celebrate Arbor Day at the Garden with Dad. Children will receive tree seedlings and collector's bags. For Members only.



APRIL 28-MAY 1 / THURS.-SUN.

Spring Plant Sale

9 a.m. to 6 p.m., April 28-29; 9 a.m. to 5 p.m., April 30-May 1. Garden Gate Shop. Discounts on a wide variety of plants and gift items. *See page 21.*

8 FRIDAY

Arbor Day Celebration

9 a.m., Ridgway Center. Free tree seedlings distributed to the first 1,000 visitors to the Garden. In Motion Dance Company will present a modern dance production called “Moving Forces: Water, Earth, Air & Fire.” Free.

12 TUESDAY

Tuesday Walking Tour

Please see April 5 for details.

12 TUESDAY

Spring Lecture Series

1:30 & 7:30 p.m., Shoenberg Auditorium. Connie Wolf, Garden librarian, lectures on “The Soviet Union—Impressions.” See April 5 for more details.

16 SATURDAY

Trees of Missouri Lecture

2 p.m., Shoenberg Auditorium. Learn an abundance of interesting information on the trees of Missouri. Free.

19 TUESDAY

Tuesday Walking Tour

Please see April 5 for details.

19 TUESDAY

Spring Lecture Series

1:30 & 7:30 p.m., Shoenberg Auditorium. Dr. Tom Roberson, science educator, lectures on “The Faces and Places of Modern China.” See April 5 for more details.

21 THURSDAY

Woodworking Lecture

7 p.m., Shoenberg Auditorium. Find out the dos and don'ts on the art of woodworking, $2 per person at the door.

26 TUESDAY

Tuesday Walking Tour

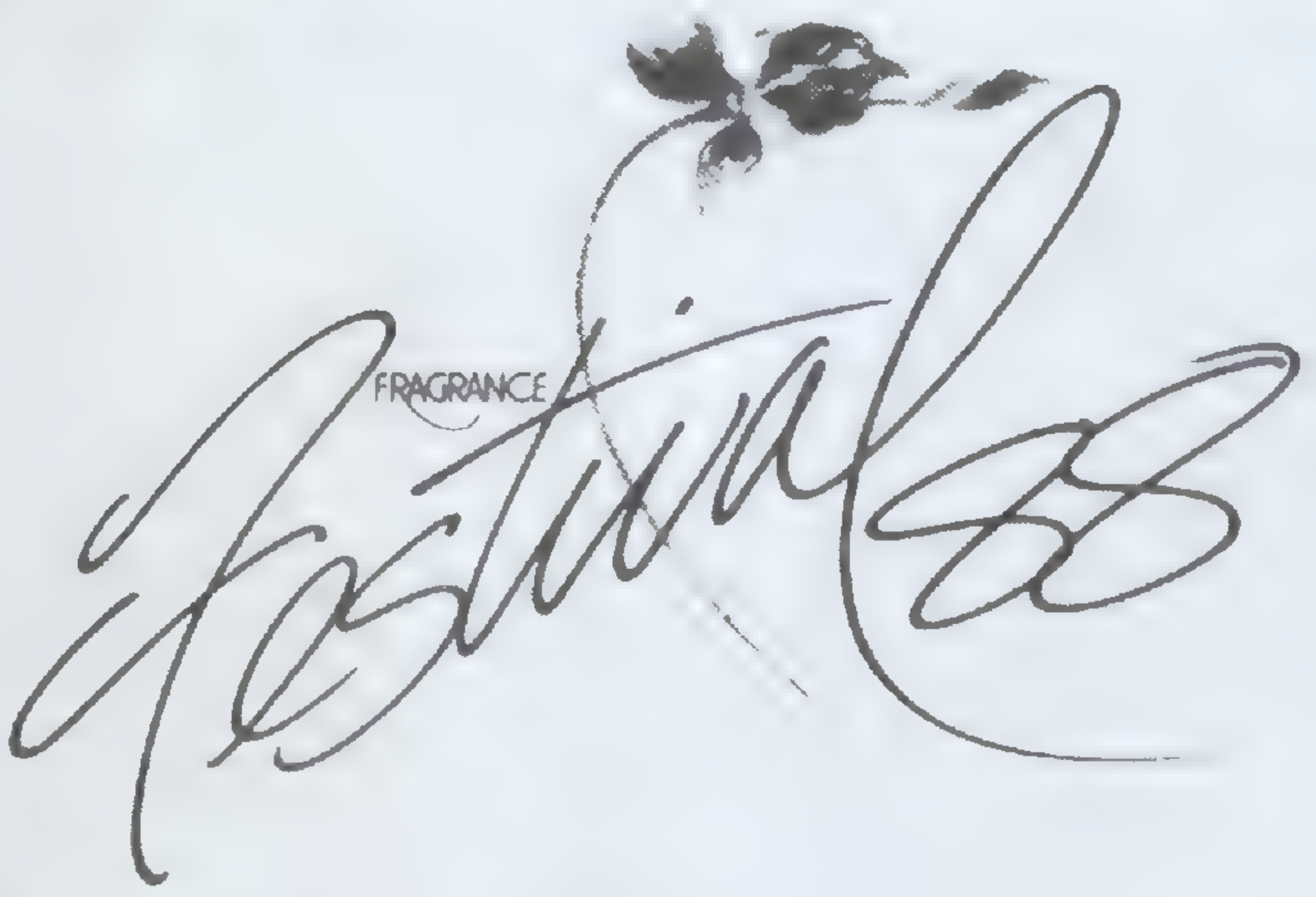
Please see April 5 for details.

26 TUESDAY

Spring Lecture Series

1:30 & 7:30 p.m., Shoenberg Auditorium. Alice Adcock, local educator, lectures on “The Cultures of India.” See April 5 for more details.

COMING IN MAY



MAY 1-8 / SUNDAY-SUNDAY

Fragrance Festival: A Celebration of Scent

See page 14 for more information on this exciting first-ever St. Louis event.

FROM THE MEMBERSHIP OFFICE

NEW MEMBERS (left to right): Donnell Reid, Ronald Pearlman, Peggy Lents, Helen Weiss, Jane Tschudy, Susie Yoder and Thomas Aylward. Barbara Cook was not present.

Members' Board Holds Annual Meeting

The Members' Board annual meeting was held on January 18, 1988 and new officers for the year were introduced along with eight new members.

Ellen (Mrs. Henry W.) Dubinsky will serve as president; Sue (Mrs. Rudyard K.) Rapp as first vice president; Mrs. Elaine A. Alexander as second vice president; D'Arcy (Mrs. Robert P.) Elsperman as secretary; and Mr. Frederick H. Atwood III as treasurer.

New members joining the board are Mr. Thomas Aylward, Barbara (Mrs. Charles) Cook, Peggy (Mrs. Don) Lents, Mr. Ronald A. Pearlman, Mr. Donnell Reid, Jane (Mrs. Robert) Tschudy, Helen (Mrs. Richard) Weiss and Susie (Mrs. Buck) Yoder.

Mr. John Biggs, president of the board of trustees, and Dr. Peter Raven, director, applauded the board for all of its successes in 1987, a year in which membership increases were substantial.

Give Mom the Garden!

Mothers always deserve the best... so give your mother the Garden this Mother's Day, May 8th. Just call 577-5118 to order your Mother's Day gift membership this year or use the application below. Your mother will receive a year's worth of enjoyment at the Garden, plus ...an exclusive bottle of delightful fragrance. The fragrance and the gift membership will be delivered on Friday, May 6, 1988.

1987 IS RECORD YEAR FOR MEMBERSHIP

Membership in the Missouri Botanical Garden grew to record proportions during 1987. Members of 20,778 households enjoy the benefits of membership while supporting their beloved Garden. The membership increased by 2,228 members, a growth rate of 12.3% for the year. This growth was due in part to the addition of a new membership category for younger members, called the MoBot Club. The MoBots now number 527 and range in age from several weeks to 14 years old.

New Historical Committee

The Historical Committee, which is responsible for the historical collections of furniture and decorative art at various locations in the Garden, appointed Miss Jane Piper as their new chairman and added two new members to the committee, Mrs. Richard T. Grote and Mrs. Richard D. Rogers. Other members are Mrs. Raymond C. Jaudes, Mrs. Landon Y. Jones, Mrs. John S. Lehmann, Mrs. Boyd Rogers, Mrs. Walter D. Schnitz, Mr. Victor Porter Smith and Mrs. Fred W. Wenzel. The committee meets approximately ten times each year at Tower Grove House.

GIFT MEMBERSHIP ORDER FORM—*Please mail at least three weeks prior to occasion:*

☐ *Mother's Day* ☐ *Birthday* ☐ *Other*

Gift To:

NAME

ADDRESS

CITY STATE ZIP

TELEPHONE

Sign gift card:

Date Needed By:

Regular Membership $35. Contributing Membership $75.

For more information call 577-5118.

Gift From:

NAME

ADDRESS

CITY STATE ZIP

TELEPHONE

☐ Enclosed is my check for $

☐ Please charge: VISA No.

MasterCard No.

Name as it appears on card:

Expiration date:

Please make checks payable to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

FRAGRANCE Festival 88

CREATING A SCENT-SATION

The Fragrance Festival: A Celebration of Scent, is a week-long event being co-sponsored by Missouri Botanical Garden and Plaza Frontenac with the assistance of *St. Louis Magazine*. With a one-week run leading up to Mother's Day, the event is scheduled at both the Garden and Plaza Frontenac for May 1 through May 8, 1988.

You may ask, "What is a Fragrance Festival?" Nora Stern, a Garden Trustee and past president of the Members' Board, asked the same question over three years ago when she noticed such an event being touted in fashion magazines referring to this exclusive New York City happening. The event in the Big Apple was sponsored by the Fragrance Foundation, the major department stores, fashion magazines and of course, the fragrance companies. Demonstrations, hands-on workshops, drawings, fashion and fragrance shows, giveaways, exhibits and gala parties all relating to the use of fragrance fill an action-packed week in New York.

What more logical connection than that of flowers and fragrance and an institution known for its flowers . . . the Garden! Nora visited the 1986 Fragrance Festival in New York taking notes and pictures. She visited the industry leaders, exhibit designers and anyone with information on how to make such an event come to life.

It was then back to St. Louis and the Garden to breathe life into this event for St. Louis. Nora began working diligently on an almost full-time basis in August of 1987 and has not stopped since. A myriad of meetings, endless letters and phone calls to New York, and a flood of ideas from people everywhere who have heard of her mission are finally culminating in a polished eight-day event.

EVENTS AT THE GARDEN

SUN., MAY 1	1:00 P.M.	*Opening Event—featuring St. Louis media celebrities and a Plaza Frontenac fashion show*
MON., MAY 2	1:30 P.M.	*Crabtree & Evelyn potpourri lecture and workshop*
TUE., MAY 3	1:30 P.M.	*St. Louis Herb Society Lecture and Herb Garden Tour*
WED., MAY 4	9:00 A.M.	*Flower Arranging Workshop and Luncheon*
THU., MAY 5	7:00 P.M.	*Garden Lecture: Fragrant Plants for Your Garden*
FRI., MAY 6	9:00 A.M.	*Mother's Day "Breakfast with Tiffany's" Benefit*
SAT., MAY 7	10:30 A.M.	*Pretty As A Posey—Make nosegays for Mother's Day gifts*
	1:30 P.M.	*Monell Center Scent Symposium—"Making Sense of Scents"*
SUN., MAY 8	1:00 P.M.	*Special Fragrance Festival gift for Mothers*
MAY 1-8	1:00 P.M.	*Daily guided tours of the Scented Garden*
	Continuing	*Film by Wheaton Industries (manufacturer of perfume bottles) will run in Ridgway Center Orientation Theatre*
		Special exhibits in Monsanto Hall

EVENTS AT PLAZA FRONTENAC

MAY 2, 4 & 6	1-3:00 P.M.	*Special Tea hosted by Elsah Landing including informal modeling by Plaza Frontenac shops*
MAY 2, 4 & 6	2:00 P.M.	*Ikebana demonstrations*
MAY 3	2:30 P.M.	*Miss Hulling's demonstrating "The Art of Cake Decorating"*
MAY 3, 5 & 7	11:00 A.M. and 2:00 P.M.	*Herb Society of St. Louis herb demonstrations*
	1-3:00 P.M.	*Special Tea hosted by Miss Hulling's including informal modeling by Plaza Frontenac shops.*
(Dates and times to be announced)		*Williams Sonoma—Chef-per-day cooking demonstration*
MAY 2-8	1:00 P.M.	*Performances of music and dance including string ensembles, piano, harp & ballet*
	Continuing	*Hawaii floral photo exhibit by Ray Marklin*
		Missouri Botanical Garden floral exhibit
		Other special exhibits

A fragrance-related opening featuring well-known St. Louis media celebrities will kick off the week's activities highlighting the Garden-flower-fragrance connection. Other events include a flower arranging workshop, tea-time and informal modeling, daily cooking demonstrations, a symposium on scent, herb lectures and garden tours. Several exhibits, drawings for two exciting trips and a benefit event, "Breakfast with Tiffany's," will assure an entertaining and educational experience for visitors.

Members will receive more detailed information on the Festival via special invitation by mail in April. Also, the Festival schedule will appear in the April issue of *St. Louis Magazine*.

Trustee Profile

HARRIET SPOEHRER

Mrs. Spoehrer, who has served as a Garden emeritus trustee since 1985, has fond memories of the Garden dating back to her childhood. "I remember visiting the Garden many times as a child, playing along the many pathways surrounded by beautiful flowers. We entered the Garden through the Flora Gate and I can still visualize the breathtaking setting of the lily pools," Mrs. Spoehrer recalled.

Her contacts with people special to the Garden were developed as a child when Mrs. Spoehrer attended school with Harriet Rodes Bakewell, the daughter of Dr. George Moore, director of the Garden from 1912 to 1953. (Mrs. Bakewell recently died. See page 19.)

"I first learned of the incredible research and education programs at the Garden when Dr. Raven arrived. It was then that I became aware of the critical importance of the research and the impact of what is happening in the tropics. Plant species are the basis of so many wonderful medicines which have helped so many children and adults and that's what's important. The Garden has become my favorite place because of what it is doing to help people," says Mrs. Spoehrer.

Other family members feel as strongly as Mrs. Spoehrer does about the Garden. Her daughter, Mrs. Robert Tschudy, just joined the Members' Board. Mrs. Spoehrer added that it's a very exciting time to be involved with the Garden. She expressed special enthusiasm about the wonderful plans for the renovation of the Climatron, and the installation of the seven Milles sculptures which will make her favorite childhood place even more stunning.

"Almost everyone knows how beautiful the Garden is every day of the year. I wish more people were as aware of how much work is accomplished in research and the education program, benefiting people throughout the world," she added.

NEWS FROM SHAW ARBORETUM

Spring Wildflowers

What better way to greet the spring than to stroll through woods brushed with fresh new green and delicate tints of spring wildflowers. For Garden Members and visitors who are unacquainted with Shaw Arboretum, a springtime walk along its woodland trails would be a delightful introduction to the Garden's 2,400-acre facility at Gray Summit, Missouri.

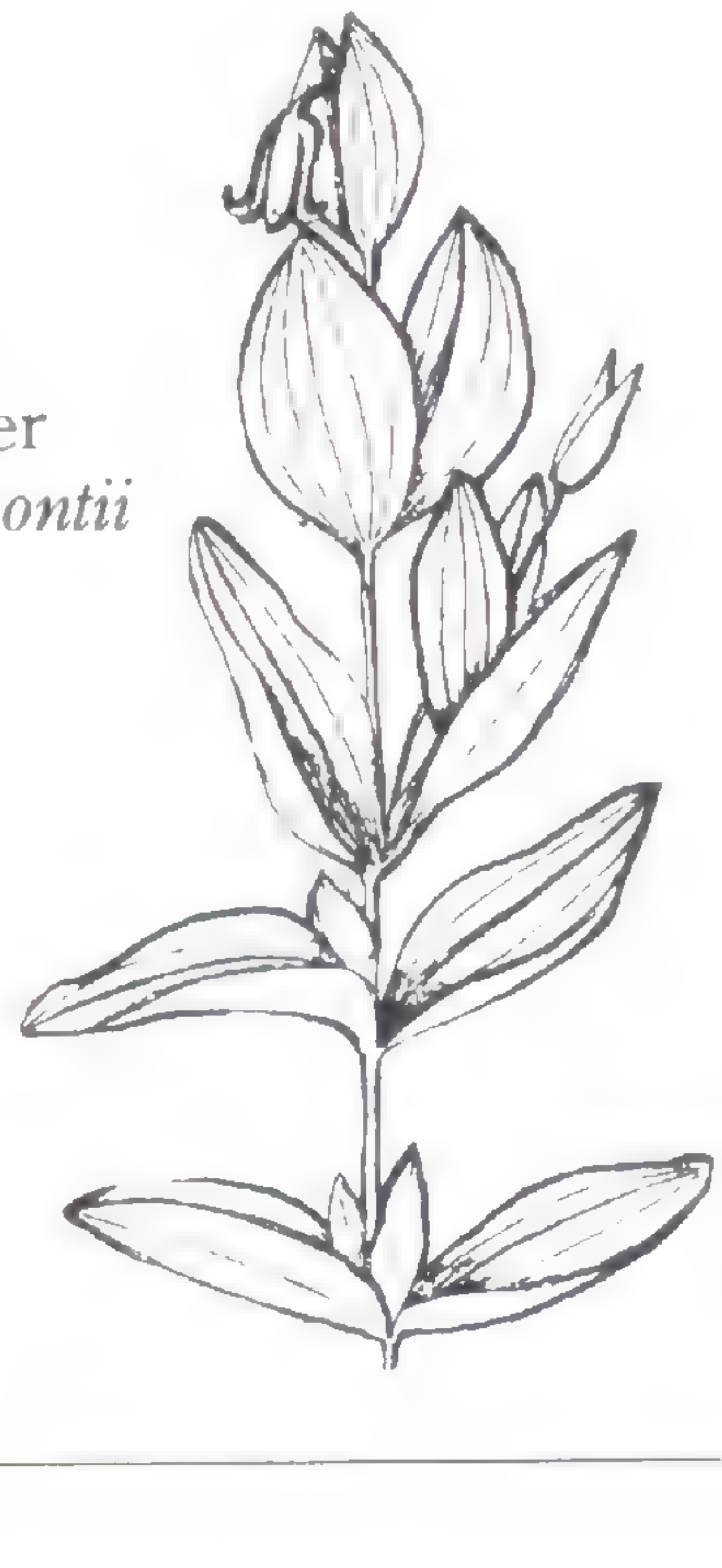
Shaw Arboretum is situated in the transition zone of the northern Ozarks and the glaciated plains to the north. This location, along with the down-cutting action of the Meramec River, which flows through the property, has resulted in a diversity of natural communities. Upland oak-hickory forest, rich wooded slopes, dolomite glades, flood plain, meadows and streams provide conditions favorable to a diversity of wildflowers.

Spring wildflowers bloom profusely in the rich habitats between the Trail House and the Meramec River. This 300-acre wooded area was developed as a wildflower reservation in the 1930s by Dr. Edgar Anderson, Louis Brenner Jr. and colleagues. The wildflower reservation was an ambitious undertaking. The existing flora was completely inventoried and augmented by planting species from nearby localities. Seven miles of trails were designed and built, and some were lined with dogwood and redbud trees. The wildflower reservation was conceived not only as a way to preserve a typical example of Ozark landscape, but also as an outdoor laboratory to study the native flora. In 1942, the rustic Trail House was built at the head of the trail system. A detailed description of this project may be read in the October 1987 issue of the *Bulletin*.

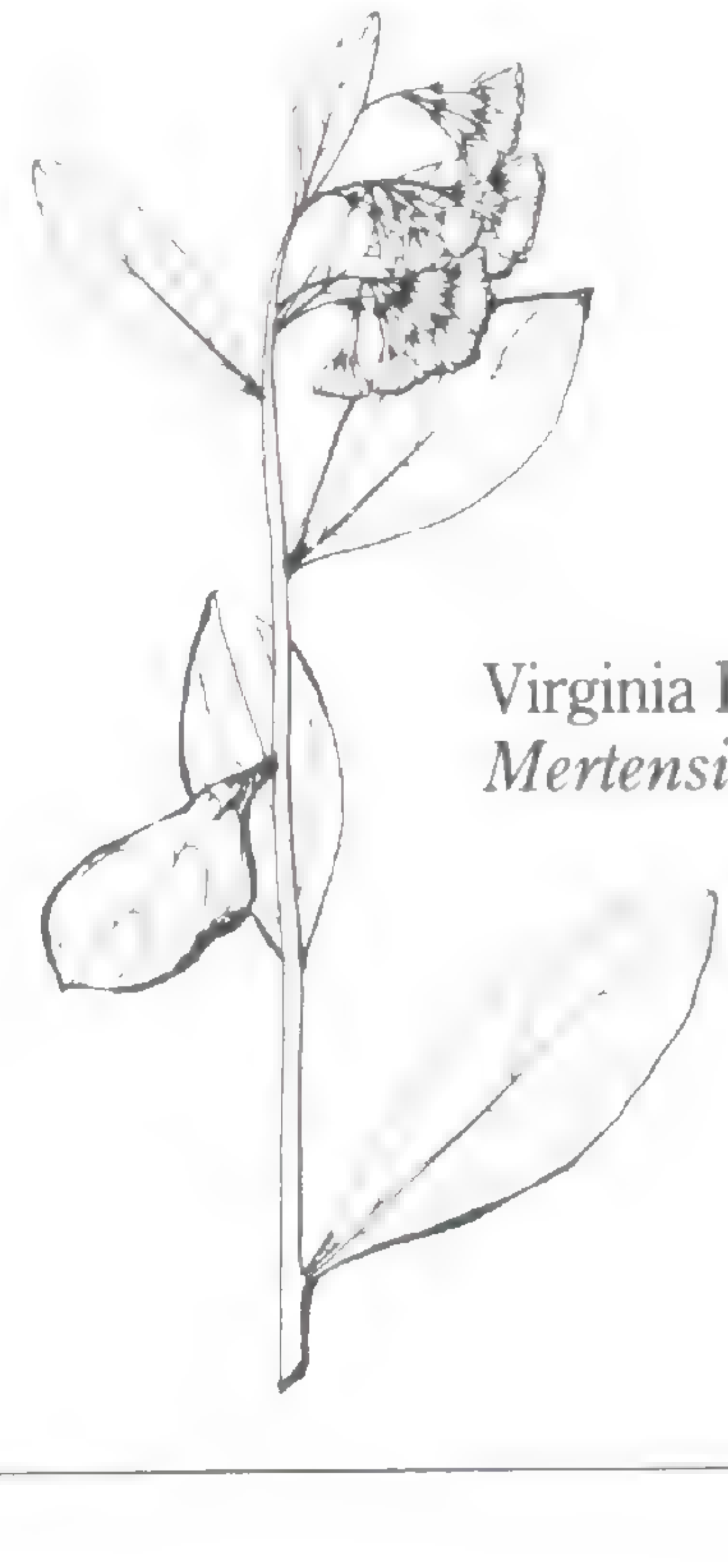
At least 250 species of flowering plants bloom in succession, beginning in March as the soil warms, reaching a peak in early May and declining in numbers by the end of May, when the tree canopy shades the forest floor. Species in the glades, such as Missouri Evening Primrose and Pale Purple Coneflower, bloom in early June. Come see the starry Bloodroot in March, Virginia Bluebells carpeting the flood plain in April and the rare, bell-flowered Fremont's Leather Flower in the glades in early May.

An excellent way to enjoy the wildflowers and learn their names is to take a Tuesday morning tour with knowledgeable guides from the Webster Groves Nature Study Society. Tours are held every Tuesday in April and May, beginning at 9:30 a.m. at the Arboretum Visitor Center. Reservations are not required. The fee is $2 per Member and $3 per non-member. The faithful guides, Art Christ, Nell Menke, Susan Russell, and Betty Nellums, have been leading these popular tours for 11 years. They haven't seemed to age at all and each year come back as fresh as the spring wildflowers themselves.

—Joyce Davit, Arboretum staff

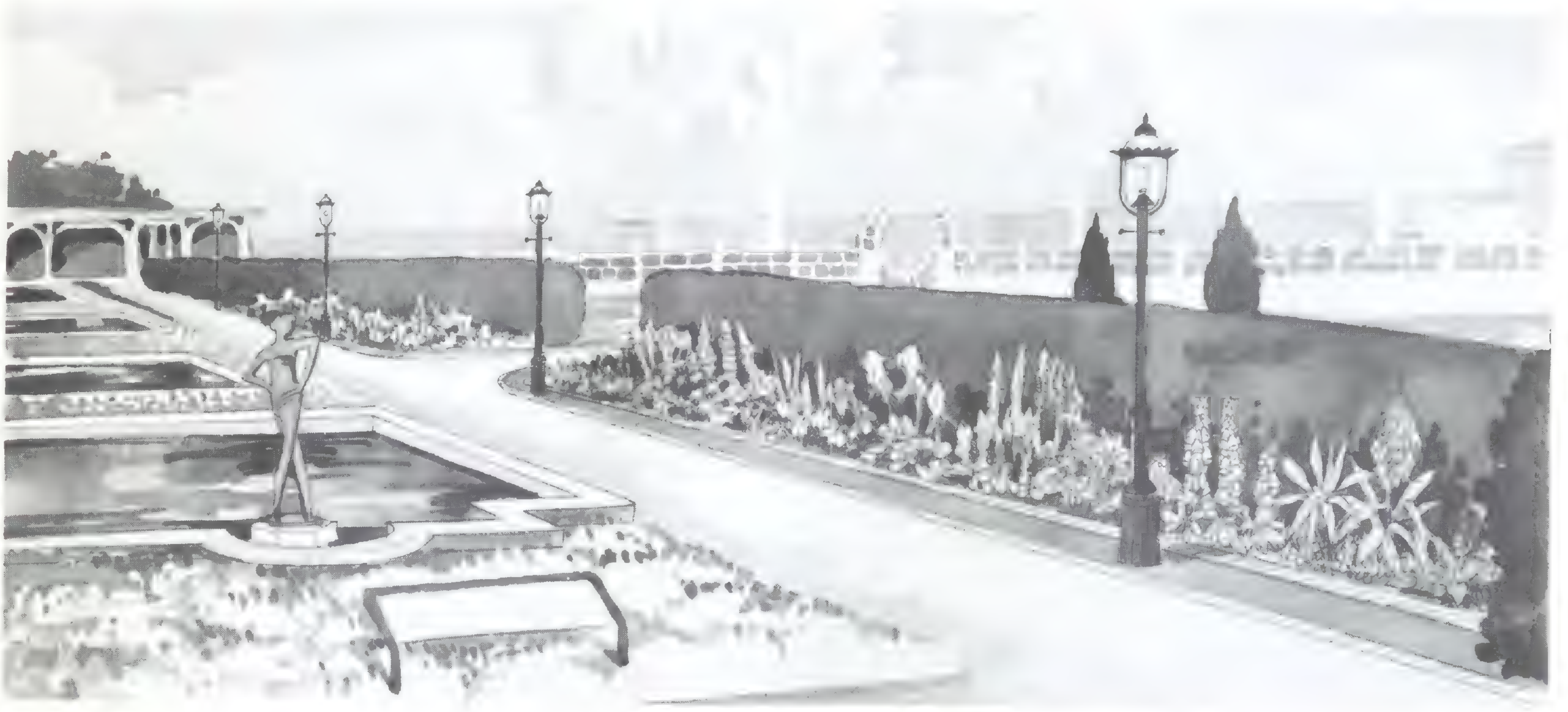


Fremont's
Leather Flower
Clematis fremontii



Virginia Bluebells
Mertensia virginica

Gardening With Perennials



The perennial garden facing the Linnean House.

Perennials are plants that generally do not maintain woody stems from year to year, but return from persistent roots. Perennials can be mixed with woody plants in the landscape, they can be used alone in borders and free-standing beds, and they can be interplanted with annuals.

Gardening with perennials is not a new art. It has been practiced since man's earliest attempts at cultivating the earth. Both in form and function, perennials constitute a very diverse group. They not only represent plants valued primarily for flowers, such as iris, peony and daylily, but include such practical herbaceous material as alliums, lavender, sage and thyme.

The ideal in today's modern garden is to use mixed plantings—perennials, annuals, shrubs and small trees. The advantages become apparent during the winter when the herbaceous border looks rather bleak. The best gardens provide interest throughout the year.

PLANNING THE GARDEN

The talent to design a beautiful garden is rarely combined with the ability to grow plants well, but each definitely enriches the other. One advantage in designing a garden is that plants are alive and flexible. They can be moved, discarded or increased, and the plan of the bed or border revised, as necessary after planting. A perfect garden layout is seldom achieved in the first year, and there is much less trauma in changing the plan than there is, for example, in remodeling a part of the house. The major stumbling block is that the design must be a projection of the imagination, for it is impossible actually to place plants on location with all of them in full bloom.

Successful garden design is the result of input gleaned from many sources:

- Books, catalogs, films and other printed and recorded materials.
- Past experience (one of the most reliable sources of information.)
- Observation made while visiting public and private gardens.

Four main elements play a role in garden design and in the ultimate success of the garden:

Light. Light is a prime factor in any design evaluation. The entire growing season must be taken into account. For instance, what may seem a lovely sunny space during much of the year is shaded in summer by trees in full foliage. Also, shadows from buildings, walls, and other objects will lessen to varying degrees the amount of sun available throughout the year. Light for plants is usually described as:

- *Full Sun*—direct sunlight touching a large expanse (meadow, open lawn, open terrace) the greater part of the day (a minimum of six to eight hours).
- *Half-Shade*—three to four hours of direct sunlight per day, usually concentrated in the morning or afternoon.
- *Shade*—no direct sunlight, but enough indirect light to support some plant growth.
- *Deep Shade*—low level of indirect light under heavily foliaged trees (horse chestnut, maples, beeches) where it is a limiting factor for plant growth.

Air Circulation and Wind Exposure. Open city terraces, on the one hand, are usually highly exposed sites where the wind factor is an essential consideration. A small fenced back yard, on the other hand, has limited exposure, but often poor air circulation as a result. Plants prefer something between the two extremes. Good air circulation, which helps alleviate disease problems and contributes to strong growth, is essential.

continued on next page

Windbreaks of various kinds can overcome the problem of exposure. For areas of poor air circulation, the gardener has no recourse but to choose from a limited number of plants that are tolerant of the condition.

Soil. One of the most important factors in growing any plant successfully is soil, and of prime concern is its ability to drain moisture readily. If the soil of your prospective planting site always puddles after a rainstorm or if snow is slow to melt from it in the spring, seek another location.

Climate. Perennials, like other plants, are highly specific regarding the extremes of temperature they are capable of tolerating. Choose only plants known to be hardy in your particular climate zone.

Two non-environmental factors relate directly to the quality of your garden:

Color. This is what the garden is all about. Before selecting a color scheme, consider all of the colors in the garden's surroundings, including the house, paving materials and the blooms of flowering trees and shrubs. Consider also the degrees of intensity of these colors. Herein lies the "art" of gardening, so well espoused by such greats as Gertrude Jekyll, who designed borders as if she were creating an impressionistic canvas. She unified a garden space by adhering to a single color scheme—predominantly white flowers, green and gray foliage, with some soft lavender added here and there, for example.

Choose flower colors that are pleasing to you. Place them in masses rather than in teasing touches, and tie them together with a continuous flow of one color. Of course, this is much easier to describe than to achieve, but by using perennials, bulbs, annuals and biennials, there will be color in the garden most of the time.

The goal of continuous color can be achieved through careful choice of plants. Color in spring is provided by hardy bulbs. Begin with the earliest, such as galanthus and winter aconite, followed by crocus, daffodils and tulips. Companion materials might be Japanese witch hazel, cherry trees and crabapples. Select next from woodland wild flowers, such as trilliums, hepatica, bloodroot, hellebores and bluebells. Early perennials—alyssum, candytuft, forget-me-not and bleeding heart—follow close behind. These pave the way for iris, peony and Oriental poppies. Roses then flower in harmony with lilies, baptisia, phlox, astilbe, coneflower and many others. By this time, annuals are also in bloom. The splendor continues with asters and chrysanthemums until the onset of frost.

Texture. Not to be overlooked are the variety of contrasting textures offered by the foliages of perennials. These run the gamut from the softest and furriest to the feathery to the harshest and most prickly to the ornamental grasses. No design is complete without consideration of the esthetic possibilities of mixing and matching these forms.

SOIL PREPARATION

Soil is the most important factor in gardening. Well prepared, it allows abundant root growth and supplies nutrients. When soil is "worked" deeply, roots have an easier time pushing down, resulting in strong growth. Deeply rooted plants have access to underground moisture, which is vital during time of drought.

Garden soil has four essential components: water, air, minerals and organic matter. The balance of these contributes to tilth (well-being, richness) and friability (how crumbly the soil is). Ideally, soil is approximately 50% air and water, 5% organic material and the rest parent mineral matter (from the finest clay to the coarsest sand). The basic mineral character of any soil is virtually impossible to change, but soil quality can be amended as a result of preparation efforts.

Few suburban or city gardens have soils with adequate organic matter. A readily available and excellent soil improver is dead leaves. In the autumn, rake fallen leaves into the bed and work them into the top five-to-six-inch layer of soil. Soil microorganisms will decompose the leaves before cold weather sets in. If you have no compost or leaf mold available, substitute a three-to-four-inch layer of peat moss. Moisten before mixing into the soil, or the peat will act as a wick, absorbing water rather than augmenting the moisture already present. An application of several inches of aged manure will also work wonders.

Well-drained soil is vitally important in order for water to penetrate rapidly without sitting on the surface. Avoid situating the flower bed in areas that do not drain well. Use these locations for shrubs and other plants that tolerate wet roots.

While digging the bed, apply a fertilizer such as 12-12-12 at a rate of two to four pounds per 100 square feet. It is also wise to check the soil pH. You can buy a pH testing kit at most nurseries. A pH level between neutral (7.0) and slightly acid (6) is ideal for most perennial flowers. A pH in the 6-to-5 range, which is moderately acid, is best for woodland flowers, azaleas and rhododendrons. Apply lime at a rate of three to four pounds per 100 square feet to neutralize too-acid soils. Use an acid-type fertilizer to help turn around soils that are too alkaline. Iron sulfate, ammonium sulfate and even agricultural sulphur will also increase soil acidity. Organic matter, such as oak leaf mold and peat, or cottonseed meal, are acid-encouraging materials that are less likely than chemical additives to damage plants.

The above recommendations refer to the creation of new beds, but the same directions apply if you are merely revamping pockets in the bed or border. When dividing perennials, never replant the division without renewing the soil first.

PLANTING

Perennials are generally sold in fall and spring. Plant in spring those that bloom in the fall, and plant in fall those that bloom in spring. However, containerized stock, so widely available today, can be planted virtually any time of the growing season. Plant perennials so the crown is at ground level or slightly higher. This keeps water from standing at the crowns and helps prevent rotting in winter.

MAINTENANCE

Once the garden is planted and the first new shoots begin showing, the die is cast. Tending the garden thereafter can be enormously pleasurable and the best prescription for built-up tension. Well-cared-for-plants are almost always healthy. If you choose specimens that do not have disease or insect problems at the outset, spraying will not be necessary.

In the spring, remove mulch and protective boughs, along with winter debris. When forsythias begin to bloom, most of the harsh freezing of winter is over and spring chores may begin. Fresh air and sun will dry off the crowns, and this is the time to cultivate ever so gently. A light application of liquid fertilizer at half strength is also in order. As green shoots being to emerge, thin such plants as asters and phlox. Cut selected stalks at ground level. If too many stalks are allowed to remain, growth will tend to be spindly. Begin pinching asters and chrysanthemums. This practice produces more flowers per plant and greatly improves the overall show.

WATERING

As rainfall tapers off, watering becomes necessary. Always water deeply, not just a sprinkle over the surface. Deep watering encourages deep rooting and promotes drought tolerance. A soil soaker is a good way to water, and so is a fan-type lawn sprinkler, which approximates rain. If poor drainage is a problem, then to avoid mildew and such disease as botrytis (flower blight), do not water, but allow plants to draw solely on available ground sources.

GROOMING AND STAKING

Grooming is a continuous process. Remove yellowed and browned leaves and spent flowers. Also remove seed pods, as these tend to sap a plant's strength. Exceptions are the flowering grasses and ornamental onions. Midseason is a good time to apply a fertilizer, but this should never be regarded as a substitute for good soil preparation. Be aware of your plants' flower and foliage coloration. An off color may indicate a problem that can be corrected by fertilizing, watering or both.

To keep many perennials from flopping over, staking is often necessary. Natural materials, such as branches or twigs, are the most readily available. An excellent source is privet, as it grows straight and branches at the right point. Tall, erect-growing plants, such as foxglove, dahlia and delphinium, can be supported by bamboo stakes. Wire supports are also effective and almost impossible to detect.

MULCHING

Summer mulching helps control weeds and retain moisture. Mulch must be chosen carefully to be esthetically pleasing. Shredded leaf mulch and finely ground bark are excellent. Bark materials will require additional nitrogen, as soil microbes will break down the bark—not a problem with leaf mulch. Other organic mulches include ground corncobs, rice hulls or ground peanut hulls. Local availability will likely influence your choice of material.

DIVIDING

To keep plants from outreaching their beds and to maintain a free-flowering condition, occasional dividing is in order. A few plants, such as peony, bleeding heart, gasplant, baptisia and balloon flower, do not require dividing. Some, such as chrysanthemums, must be divided each spring. Others, such as heucheras, asters, phlox, heleniums, shasta daisies, astilbes and physostegias, need dividing every three years. The rule of thumb is to perform the operation after plants flower. A knotted mat of leaf stems, dead woody centers and less-than-spectacular blooms are other indications that dividing is required.

FALL CLEANUP

Cut yellowing and fading stalks down to three to four inches. The resultant stubble provides anchorage for winter mulch. Mark late-appearing plants, such as balloon flower, with stakes. Mulch to prevent ground heaving caused by alternate freezing and thawing in winter. Wait until after the onset of a hard freeze. Care must be taken with plants that have evergreen tops. Too much mulch can cause them to rot. Such plants as Oriental euphorbia, poppy and anchusa (forget-me-not) need a light, airy mulch, such as evergreen boughs or pine needles and branches.

—Alan Godlewski,
Director of Horticulture

IN MEMORIAM

Harriet Rodes Bakewell

1904-1987

Mrs. Bakewell receiving the Garden's Greensfelder Award, Sunday, June 21, 1987.

On Dec. 12, the Garden lost a long-time member and talented associate. Garden members and staff were saddened to learn of the death of St. Louis landscape architect Harriet Rodes Bakewell, 83. Mrs. Bakewell, who literally grew up at the Garden, will be missed here.

A lifelong Garden supporter, Mrs. Bakewell was noted for her excellent work on several areas regarded as favorites of Garden members and visitors. Projects benefiting from her expertise include the Japanese Garden, the Anne L. Lehmann Rose Garden, the Shapleigh Fountain and the Waldemer Memorial Fountain.

Many of the area's and the nation's most prestigious honors and awards in her field marked Mrs. Bakewell's career as a landscape architect. On June 21, 1987, she received the Garden's Greensfelder Award for her contributions to landscape architecture and urban improvement.

In 1983, she had been named a Fellow by the American Society of Landscape Architects. That same year, she was awarded the Mrs. Oakleigh Thorne Medal from the Garden Club of America for outstanding achievement in garden design.

Mrs. Bakewell was the daughter of Dr. George T. Moore, director of the Garden from 1912 to 1953 and director emeritus from 1953 to 1956. When her father accepted the directorship of the Garden and moved here from Washington, D.C. in 1912, she lived in Tower Grove House. Then, in 1914, her family became the first to occupy the newly built director's residence.

Mrs. Bakewell attended the Washington University School of Architecture (1929-1934 and 1946-1947), where she completed a bachelor's degree, and Harvard University's Graduate School of Design (1929-1930).

She was involved with many important St. Louis projects. Her design work is featured at Lambert-St. Louis International Airport, McDonnell Douglas Engineering Campus and Space Center, the headquarters of Maritz, Inc., West Port Plaza, Steinberg Memorial Skating Rink in Forest Park, and private residences.

Mrs. Bakewell married Boyle Owsley Rodes in 1927. Rodes, a mayor of Ladue, died in 1945. She married prominent attorney Paul Bakewell, Jr. in 1956. He died in 1972.

Four children survive: Boyle O. Rodes, Jr. of St. Charles, Thomas M. Rodes of Garrett Park, Maryland, Harriet M. Carter of Princeton, Massachusetts, and Margaret M. White of Sperryville, Virginia. Mrs. Bakewell is also survived by twelve grandchildren and seven great-grandchildren.

Tribute gifts made in Mrs. Bakewell's memory are listed on page 22 of this issue of the *Bulletin*.

For Younger Members

Your Own Garden

Mary Mary Quite Contrary,
How does your garden grow?
With pepper, corn, beans and peas
all in a row.

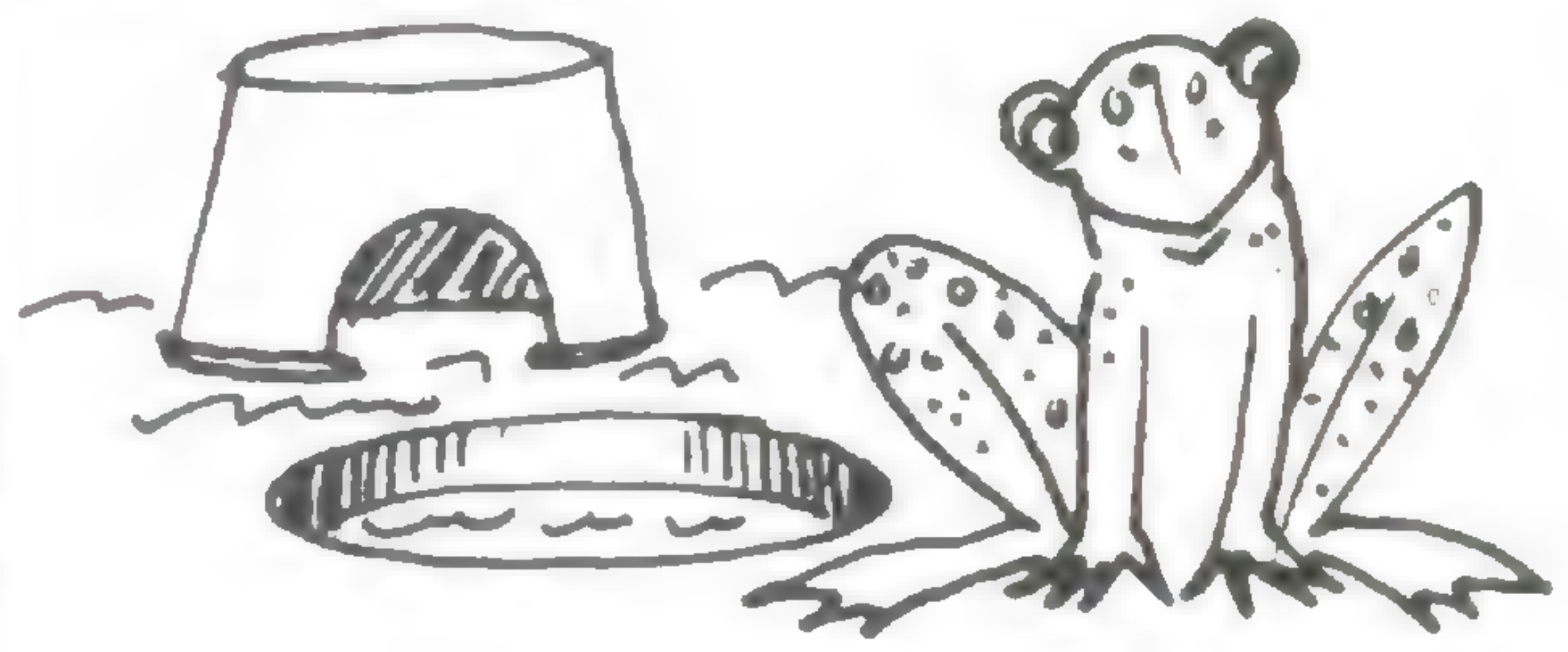
Growing a vegetable garden can be a wonderful learning experience for children of all ages. They can develop a sense of wonder with a sprouting seed, explore the science of horticulture by weeding and caring for the plants and gain an understanding of food sources through harvest. If your family is contemplating a gardening project, remember, a children's garden need not be fancy or elaborate to be successful. As a matter of fact, simple and easy are the key words.

The first step in any garden is planning. Pull out those seed catalogs and spend some time looking at the pictures. Talk about the foods your family enjoys. Locate those plants in the catalog and discuss which plants you can grow in this climate. Explain why some fruits and vegetables children like to eat do not grow well in our part of the world. This will help them learn the difference in climates and geography.

When selecting seeds, choose plants that require low maintenance. Plants that form ground vines require less weeding. Good ones to choose are pumpkin, zucchini, cucumbers and squash. Vegetables that produce early give immediate results and help stimulate interest. Try some early peas and young onions. Most children enjoy harvesting plants. It is best to plan your garden so that harvest is continuous. Check your garden catalog for specific harvest dates.

A garden can be the site of many exciting discoveries for children. When youthful fingers tire of weeding and planting, try the garden activities.

PROJECT / *Make a Toad House*



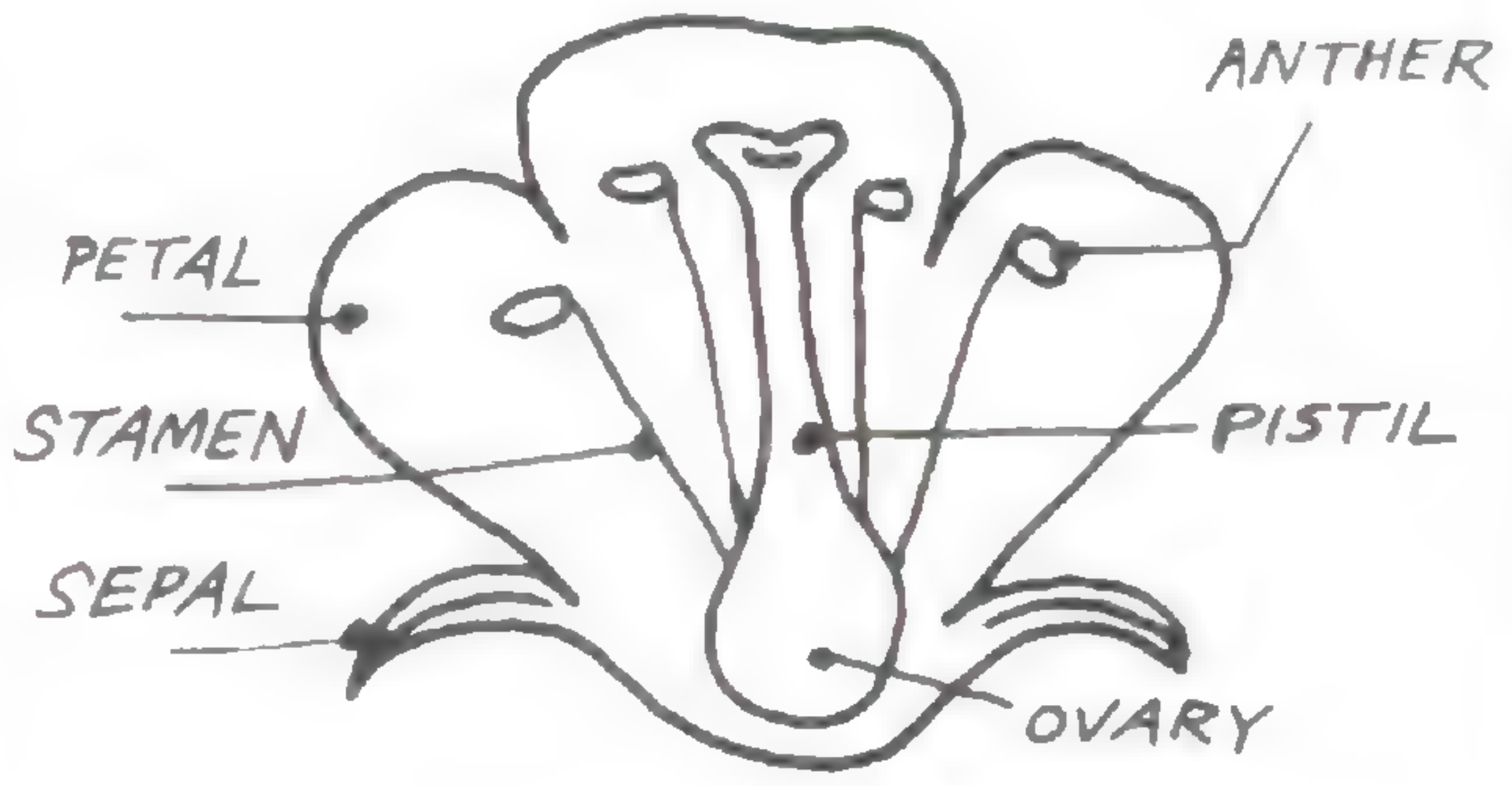
Every garden needs a friendly toad to eat garden pests. You can lure toads to your garden by making toad houses.

You will need:
Scissors
Cottage cheese containers

What to do:

1. Cut a half-circle doorway at the edge of one container. Make sure it is wide enough for a toad.
2. Turn this container upside down in the garden. This is the toad's house.
3. Next dig a hole in the garden big enough to hold the other container.
4. Put the container in the hole, fill it with water and this becomes his swimming hole. Now you are ready for your toad to move in!

PROJECT / *A Floral View*



A flower is the part of the plant that produces fruit and seed. Learn the basic parts of a flower through flower dissection.

You will need:
Razor blade (an adult's help)
Scotch tape
White paper
Flowers

What to do:

1. Cut your flower in half and examine what you see. Take each piece of the flower apart and label it and tape it to your white paper.

To help you identify the parts, start at the stem. The sepals are the first part. They are green and look like modified leaves. Above the sepals are the petals. Their main function is to attract pollinators with their bright colors. Inside the flower you will find the stamens. The yellow at the tip of the stamen is the anther, which may contain pollen or may have broken and have powdery pollen on it. At the center of the flower you will find one or more pistils.

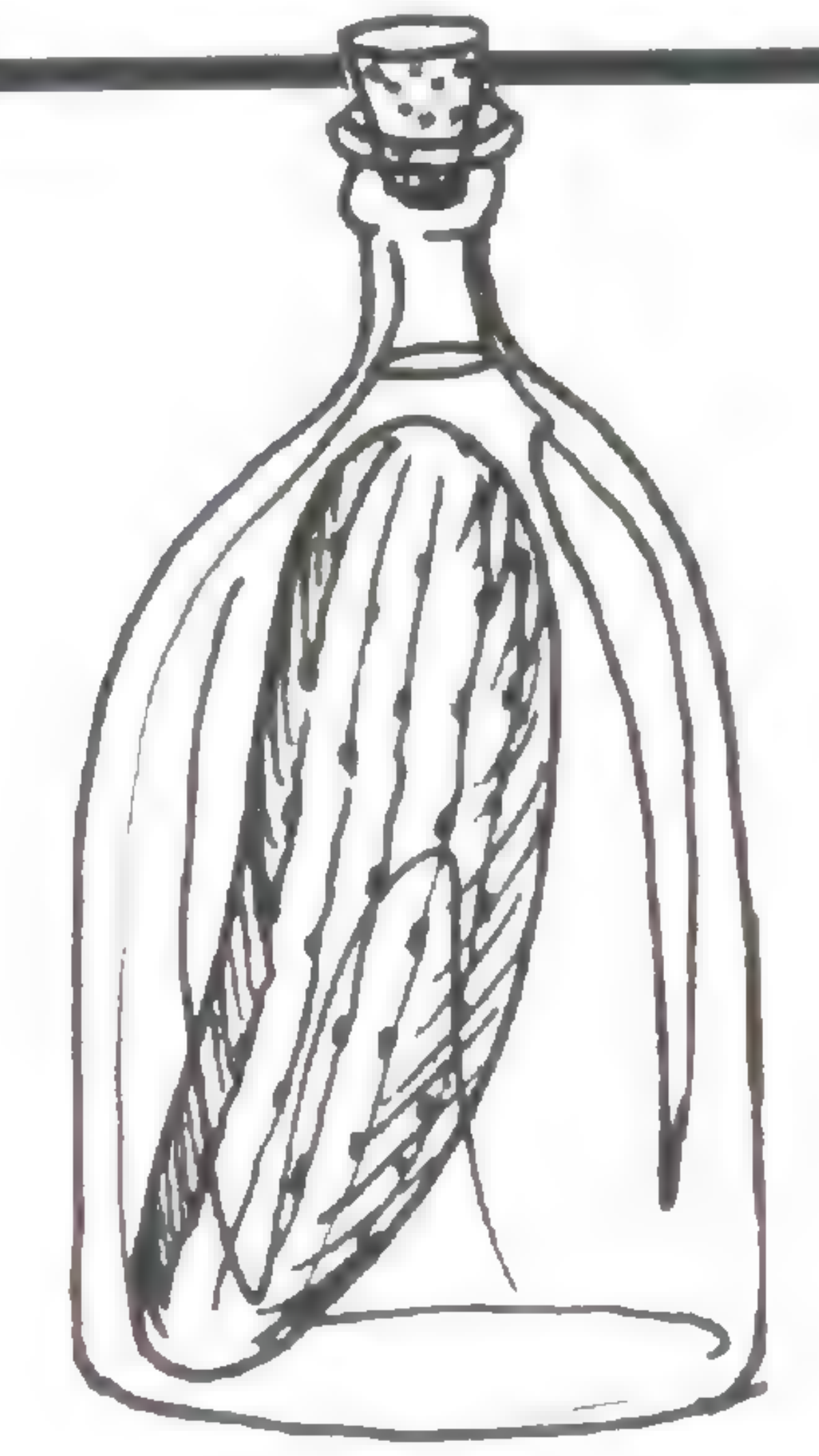
PROJECT / *Grow a Cucumber in a Bottle*

If you want to amaze your friends and relatives, try this neat trick.

You will need:
A young cucumber growing on the vine
Small necked bottle with cork
Newspaper
Pickling brine (½ salt, ½ water for preservation only, NOT TO EAT)

What to do:

1. When the cucumber is small slip it into the bottle. As it grows it will expand in the bottle.
2. Protect your cucumber from the sun by placing a few sheets of newspaper over it. Otherwise it may die from too much heat.
3. When the cucumber nearly fills the bottle, cut it off the vine. Then add the brine solution.
4. Show it to your friends and see if they can guess how you did it!



Last Chance for '88 Calendars

Haven't bought your Garden calendar yet? They're reduced! Better rush to the Garden Gate Shop with your $5.00. Very few remain unsold. From all reports, the 1988 Garden calendar is a huge success and of thousands printed, not many remain.

This year's calendar has received accolades for its stunning photography and roomy format. Sellouts year after year attest to the talent of noted local photographer Jack Jennings. The production, too, is topnotch—and expensive.

Long-time Garden supporter Mrs. William H. Schield has provided the funds to make this year's calendar possible, as she has in previous years. A previous article about her contribution made an error about her name, but it quoted her accurately: "The Garden is such a wonderful place and the calendars are so beautiful I wanted to share its beauty with others."

Mrs. Schield went on to say, "It's also marvelous public relations because you can now see the Garden from almost anyplace in the world." Admiring letters and requests for the calendar from throughout the world attest to the accuracy of her comment.

Garden Receives Grants for Post-doctoral Training

Two New York foundations recently made grant awards to the Garden for post-doctoral training in tropical botany. The Jessie Smith Noyes Foundation awarded $100,000 for two years to train young systematic botanists, especially Latin Americans, at the Garden.

The Tinker Foundation has given a $50,000 Tinker Postgraduate Training Fellowship in Tropical Botany for Latin American Scientists. As with the Noyes grant, scientists from developing countries of Latin America will be invited for a six-month to one-year period of study at the Garden.

Trained scientists are needed in these countries to study rapidly vanishing tropical rainforests. Called "the most diverse ecosystems on earth," the forests and their abundance of plant species unknown to science are threatened by rapid development and lack of sound conservation practices.

From the Garden Gate Shop

The Buyers for the Garden Gate Shop have returned from New York so the Shop is full of the latest and greatest gifts for any occasion. Easter's coming, and the Shop is ready with bright seasonal decorations. Ceramic and plush bunnies, ornaments, baskets and a variety of blooming plants are available.

Please stop by the Shop and view our Spring selection of gifts and plants. As always, Gift Certificates are available.

Book Review

Spring this year brings with it two welcome additions to what is fast becoming America's favorite gardening series, *Taylor's Guides to Gardening*. The newest volumes in the series are *Taylor's Guide to Trees* (Houghton Mifflin, $14.95) and *Taylor's Guide to Ground Covers* (Houghton Mifflin, $16.95). Both guides are beautifully designed and packed with information for both the beginning and the experienced gardener.

Taylor's Guide to Trees covers the selection, care and uses for over 200 species of trees. Deciduous, broadleaf evergreen and coniferous trees are included, each illustrated by color photographs.

All of the books in this series have dealt with the selection of and care for specific types of plants. *Taylor's Guide to Garden Design* is a departure from this. This volume features fourteen types of gardens (such as rock gardens, winter gardens and period gardens). Through the color photographs, line drawings and text, it shows how these garden designs can be adapted to available space and regional differences.

All ten volumes of *Taylor's Guides to Gardening* are available in the Garden Gate Shop.

Tributes

Nov. - Dec. 1987

In Honor Of:

Mr. and Mrs. Gene Alper
Barney and Hilda Klearman
Mrs. Howard Baer
Mrs. Irvin Bettman, Jr.
Mr. and Mrs. Sol Morton Isaac
Mrs. Samuel D. Soule
Mr. Richard K. Weil
Monica Columbo Barker
Mrs. F. Carl Schumacher, Jr.
Miss Emily Shepley Barksdale
Mr. and Mrs. Whitelaw T. Terry, Jr.
Mr. Leon Bodenheimer
Mr. and Mrs. Lester R. Adelson
Mrs. Gustavus A. Buder, Jr.
Mrs. Warren C. Bruce
Mr. and Mrs. Milton Canis
Mr. Harold S. Cook
Mr. and Mrs. C. A. Case, Jr.
Mr. and Mrs. Neil F. Maune
Mr. and Mrs. Bruce R. Yoder
Mrs. Fred Cohen
Mr. and Mrs. Arthur E. Carlson
Barbara Z. Cook
Harold S. Cook
Mr. and Mrs. Charles Cook
Mr. and Mrs. Howard F. Baer
Mr. and Mrs. Walter G. Stern
Mr. Harold S. Coppinger
Mr. and Mrs. Samuel Santoro
Mrs. E. R. Culver, Jr.
Mildred Conner
Blake Peyton Daniel
Mr. and Mrs. Rick Halpern
Mr. Roland Ditmeyer
Mr. and Mrs. Peter Hochschild
Mrs. Louis W. Droste
Mrs. Fred F. Reisel
Mr. and Mrs. Aaron Fischer
Mrs. Samuel D. Soule

continued on next page

Garden Spring Sale

Scheduled in the Garden Tent
Sale also includes
Garden Gate Shop items
April 28 – May 1
Featuring
Bedding Plants • Herbs
Perennials • Roses
Azaleas • Blooming Baskets
Members Save 20% All 4 Days
Members Pre-Sale Thurs. & Fri.
April 28 & 29 9 a.m.-6 p.m.
One big sale again this year
instead of separate sales for April & May

Tributes

continued

Dr. and Mrs. I. Jerome Flance
Mr. and Mrs. Rudolph Freedman
Mr. and Mrs. James A. Singer

Dr. Jill Frank
Mr. and Mrs. Harold N. Kravin

Mr. and Mrs. George Giessing
Mrs. Carl F. Kottmeier

Helen and Irwin Gittelman
Mrs. Louis W. Rubin

Mr. Edward Goldberg
Mr. and Mrs. Phillip Schreiber

Mrs. Lindsay S. Graves
Mr. Robert G. Graves

Dr. and Mrs. Joseph S. Hayden
Ann Rochelle Hayden
Christopher Hayden

Mr. and Mrs. William Kingdon, Jr.
Mr. and Mrs. Melvin S. Strassner

Mr. and Mrs. Martin Koshner
Mr. and Mrs. Arthur E. Carlson

Mrs. Arthur Lindburg
Mildred Conner

Mrs. Anne L.C. Lionberger
Mr. and Mrs. Thomas W. White IV

Mr. and Mrs. Edward Martin
Mildred Conner

Mr. Marshall McDuffy
Jim Henderson

June Meyer

William Gage von Weise, Jr.
Margot and Jim Holsen
Mr. and Mrs. Clifford M. Kurrus

Mrs. Iris Meyerhardt
Mrs. Frances Rothman

Mrs. Charles Oertli
Missouri Botanical Members' Board

Mr. and Mrs. C. Robert Pommer
Mr. and Mrs. Otway W. Rash III

Mr. and Mrs. Paul Ring
Mildred Conner

Mr. and Mrs. Sidney Shoenberg, Jr.
Mr. and Mrs. Howard F. Baer

Mr. and Mrs. James A. Singer
Mrs. Herbert S. Schiele

Mr. and Mrs. Oscar Soule
Mr. and Mrs. Aaron Fischer

Soule Senior Citizen Center
Dr. and Mrs. Michael M. Karl

Janet Thompson
Mr. and Mrs. D. Goodrich Gamble

Mr. and Mrs. Robert Titlow
Mr. Earl Rosen, Jr.

Mrs. Milton Tucker
Mrs. Irvin Bettman, Jr.
Mr. and Mrs. Louis R. Putzel
Mrs. Samuel D. Soule
Mr. Richard K. Weil

Mr. Robert Vickers
Jim Henderson

Margaret Wilmes
Mr. and Mrs. D. Goodrich Gamble

In Memory Of:

Harriet Rodes Bakewell
Mr. and Mrs. John Bailey
Edward L. Bakewell, Jr. Family
Mrs. Rose V. Barnes
Miss Mary E. Bascom
Mrs. Esther C. Bitting
Mrs. George C. Bitting
Mr. Howard C. Blossom
Mr. and Mrs. Sidney N. Brilliant
Mr. and Mrs. Robert W. Busking
Mr. and Mrs. William P. Chrisler
Mr. and Mrs. Thomas R. Collins, Jr.
Mr. and Mrs. George Corey
Mrs. Dwight W. Coultas
Mr. and Mrs. Ian Cramer
Mr. and Mrs. William O. Cramer
Mr. and Mrs. Bertram B. Culver, Jr.
Mr. and Mrs. Charles Danna
Mr. and Mrs. Patrick M. Donelan
Dr. and Mrs. Murray E. Finn
Dr. and Mrs. A. P. Fletcher
Dr. and Mrs. Alvin R. Frank
Mr. and Mrs. Norman Freese
Mr. and Mrs. D. Goodrich Gamble
Mr. and Mrs. Joseph J. Gazzoli
Mr. and Mrs. John G. Goessling, and Gay
Mrs. Jane A. Jacobs
Mr. and Mrs. Raymond C. Jaudes
Mr. and Mrs. A. Clifford Jones
Mr. and Mrs. Landon Y. Jones
Mrs. Warren B. Lammert, Jr.
Mrs. Emmet J. Layton
Mrs. Charles W. Lorenz
Nancy Ryan Macklin
Mr. and Mrs. W. R. Orthwein, Jr.
Mr. and Mrs. Joseph Pulitzer, Jr.
Dr. and Mrs. Peter H. Raven
Mr. and Mrs. Joseph Rechter
Mr. and Mrs. T. W. Riedel
Mrs. Robert L. Rosenheim
Mrs. William H. Schield
Mrs. A. Wessel Shapleigh
Dr. and Mrs. William A. Sims
Mr. and Mrs. James A. Singer
Mr. and Mrs. Robert Brookings Smith
Mr. and Mrs. Joseph P. Spiguzza
Mrs. Lloyd C. Stark
Mr. and Mrs. Walter G. Stern
Mr. and Mrs. J. Kennard Streett
Mr. and Mrs. Alan C. Sunshine
Mrs. Horton Watkins

Mrs. Anna M. Becker
Ms. Vera A. Obst

Mr. William J. Beezley
Boyd Family
Carlene Cox
Mr. and Mrs. Albert DeBoer
Mrs. Nancy Dirnbeck
Karen and Jerry Edwards
William Fechter Family
Ms. Ruth Field
Mr. and Mrs. David W. Fitzgerald
Mr. and Mrs. John Fitzsimmons
Mr. and Mrs. John R. Fitzsimmons, and Dan
Mr. Martin H. Foeste
Mrs. G. E. Haltiwanger
Mr. Norman F. Hampton, Jr.
Mr. and Mrs. William D. Heaton, Jr.
Ms. Diane Hehmeyer
Historical Association of Greater St. Louis
Mr. and Mrs. Ross Houston
Mr. and Mrs. Arthur Iseli
Mr. and Mrs. Thomas King
Ms. Merrilee T. McDonald
Mr. and Mrs. Robert L. Mottin
Mr. James E. Murray
Mr. Timothy Richardson
Rosary High School—Faculty, Staff and Administration
Rosary High School—History Department
Miss Nora Ross
Mrs. William Ross
Mr. and Mrs. C. G. Seckel, Jr.
Storz Instrument Company Friends
Mr. Thomas Szentimrey
Mr. and Mrs. Alan Weiser
Fr. Mike Yarbrough
Mrs. Patricia K. Zahnweh

Mr. Oliver J. Belzer
Lakeshire Garden Club
Miss Charlotte B. Leu
Mr. and Mrs. Joseph O. Ondr
May Ondr

Mr. William F. Blanke
Mrs. James T. Chamness
Mr. Robert N. Hagnauer

Mr. J. Russell Bley, Sr.
Dr. and Mrs. Harry L. Knopf
Mr. and Mrs. Martin M. Liebman

Mr. Walter W. Boswell
Mr. and Mrs. John B. Henkle

Miss Louise Braun
Mrs. Linda G. Eckert

Mr. Raymond Brockland
Mrs. Mary Sherman

Mrs. Billie Brossard
Mr. and Mrs. Malcolm L. Holekamp
Mr. and Mrs. Larry W. McNabb

Edith Brumback
Mrs. J. H. Ivery, Jr.

Mr. Herman Brune
Mr. and Mrs. Bill Bell
Mrs. Paul W. Crow
Mr. and Mrs. Ralph O. Kolb
Mr. and Mrs. Noble C. Parsonage

Mr. G. H. Buchanan, Jr.
Mr. and Mrs. John B. Henkle

Mrs. Eugenia Hauk Buder
Mr. and Mrs. Robert L. Blanke, Jr.

Mrs. William R. Cady, Jr.
Mr. and Mrs. Patrick M. Donelan
Mr. and Mrs. Henry W. Dubinsky
Mr. and Mrs. Tom S. Eakin, Jr.
The Boatmen's National Bank—Officers and Directors
Mrs. J. Richardson Usher
Mr. and Mrs. Bruce R. Yoder

Mr. Calvin Christy
Mr. and Mrs. William A. Frank
Dr. and Mrs. Peter H. Raven
Mr. and Mrs. Howard U. Wilson

Mr. J. J. Chunn
Mr. Ben W. Rankin

Edward Benjamin Clanton
Ms. Eileen Jolley

Mr. and Mrs. Abraham Conley
Mr. Stephen P. Mullin

Mr. Claude Courtway
Mr. and Mrs. James L. Watel

Mrs. Weams Croft
Ms. Jane K. Guess

Betsy Reynolds Crump
Mrs. James M. Crump

Mrs. Martha Culbertson
Mrs. Edward X. Boeschenstein

Mr. Leo Daugherty
Mrs. William H. Schield

Mrs. William F. Dawson
Mr. Stephen P. Mullin

Mrs. Rosemary Delaney
Mr. and Mrs. Len Toenjes

Mr. and Mrs. Albert S. Dexheimer
Mrs. Georgia D. Schwartz

Mrs. Edith Dorr
Mr. and Mrs. Bernard A. McDonald

Mr. and Mrs. Christ D. Doucleff
Mr. and Mrs. Glenn L. Gifford

Mrs. Grace D. Durocher
Dr. and Mrs. Everett W. Kling

Miss Nellie Elkins
Mr. and Mrs. Richard Halpern

Mr. Sherwin Ellingson
Mrs. Jan Croft

Dale Grant Farmer
Eunice Farmer Fritsche

Mr. Colman Fenwick
Barnes Hospital—O.P.S.C.
Mr. and Mrs. Joseph Danklef
Annette D'Aran
Mr. and Mrs. Joseph J. Feco
Ms. Miriam Fenwick
Mr. William T. Forshee
Alice K. Fry
Nadine McKnight
Morning Glories Bowling League
Mr. and Mrs. Frank Proctor
Ms. Barbara J. Wilson

Mrs. Jeannette Fowler
Grace C. Yount

Mrs. R. N. Frazer
Ms. Jane K. Guess

Miss Gussie Frenzel
Mr. and Mrs. Carlisle D. Kinyon
Mrs. Ralph R. Kinyon

Mrs. Riette Sale Frey
Dr. and Mrs. Llewellyn Sale, Jr.

Bunny Friedman
Mr. and Mrs. Seymour Krout

Mrs. Oliver Funsch
Mrs. J. Eugene Johanson

Vera Gion
Mr. and Mrs. Warner Simons

Mrs. Helen Gokenbach-Tefft
Miss Bess J. Corn

Mr. Joseph Grasso, Sr.
Mrs. J. Richardson Usher

Mrs. Mary M. Hardin
Mr. and Mrs. John B. Henkle

Mrs. Marge Herring
Mrs. Robert H. Kittner

Mrs. Nancy Hill
Mr. and Mrs. Arthur W. Anderson

Mrs. Thelma C. Hobbs
Mr. and Mrs. Blair G. Balk
Mrs. Robert W. McCormick
Wydown School Staff

Mrs. Ardeth Hollo
Mr. and Mrs. Clarence T. Wilson

Mrs. Ada J. Blumeyer Holthaus
Mr. and Mrs. Charles J. Cook
Mr. Herman Holtkamp
Mrs. Edith B. Quick and Family
Mr. Wallace E. Isrig
Mr. and Mrs. Warner Simons
Eva Jacobs
Mr. Seymour Krout
Mr. Joey Jacobsmeyer
Mr. and Mrs. Robert E. LaMear
Mrs. Susan Birk Jaudes
Mr. and Mrs. Raymond C. Jaudes
Mrs. Charles S. Jenney
Mr. and Mrs. John Brodhead, Jr.
Mrs. Velma Jones
Mrs. Alice Beffa Erdelen
Miss Susan Kaplan
Ms. Jerilyn M. Cohen
Mr. Osa Kearby
Ms. Judith C. Hill and Family
Mrs. Billy Kendall
Mrs. Lynette Dowell
Mrs. Estelle Kilcullen
Mrs. Geraldine Epp Smith
Mrs. Robert Knapp
Mrs. Warren Gladders
Mrs. Vicky Koury
Mr. Stephen P. Mullin
Alma Lauck
Mr. Dan E. Platt
Mrs. Sharon Platt
Mr. and Mrs. Manuel Sherberg
Hiram and Alice Fitch Lerner
Mr. and Mrs. J. L. McLean
Mr. Meyer Levy
Mr. J. W. Henderson
Mrs. Dorothy Link
Mrs. Marion V. Fisher
Mrs. John Lionberger
Mr. and Mrs. Alexander M. Cornwell
Mrs. Roland O'Bryen
Mrs. William H. Schield
Mrs. A. Wessel Shapleigh
Mrs. Lenore Loeb
Dr. and Mrs. Falls B. Hershey
Dr. and Mrs. Llewellyn Sale, Jr.
Mr. and Mrs. E. Sevcik
Mr. Irving Londy
Mr. and Mrs. Lester R. Adelson
Mr. and Mrs. Walter G. Stern
Miss Virginia Lorelle
Mr. and Mrs. Bernard A. McDonald
Mrs. Bessie Macha
Dr. and Mrs. Thomas C. Martin
Mr. Nathan Marblestone
Mr. Henry Ordower
Mrs. Ilene Ordower
Robert F. McCoole
Mr. and Mrs. Richard W. Baizer
Evelyn B. McCown
Dr. and Mrs. Peter H. Raven
Mrs. Rosemary McDaniel
Mr. and Mrs. R. J. Kersting
Mr. Harold E. McDonald
Mr. and Mrs. Bernard A. McDonald
Robert Derrick McDonald
Mrs. William Bixby, Jr.
Dr. and Mrs. James K. Turner
Mr. Thomas McHenry
Mr. and Mrs. Samuel Santoro

Mr. Thomas S. McPheeters
Mr. and Mrs. Lucien R. Fouke, Jr.
Mr. John McWhorter
Ms. Lynn K. Silence
Mrs. Jane Mehan
Dr. and Mrs. Francis J. Burns
Mr. William J. Meisburger, Jr.
Mrs. J. Maver Feehan
Mr. and Mrs. Roger M. Grossheider
Mr. and Mrs. Ralph E. Lee
Ms. Elizabeth Phillips
Ms. Patience Phillips
Mr. Wayne Sachtleben
Emelee K. Wilkey
Mrs. Marie Melchior
Mr. and Mrs. Ronald G. Mueller
Mrs. Dorthea Mettler
G. F. Barry Family
Mrs. Edith K. Meyer
Mr. and Mrs. Leonard Kantor
Mrs. Garrett Meyer
Mrs. Clinton U. Imboden
Mrs. Ruth P. MacCarthy
Mrs. Ridgely W. Meyer
Mrs. Robert G. Ellis
Mrs. Ruth Michenfelder
Mr. and Mrs. Phillip Schreiber
Mr. J. Joe Milligan
Mr. and Mrs. Elmer K. Hencke
Mr. Harold W. Mohrman
Mrs. Milton J. Scott
Robert L. Murphy
Robert L. Murphy Family
Robert Neill
Dr. and Mrs. Peter H. Raven
Mother of Mrs. Netter
Mr. and Mrs. Lester R. Adelson
Mr. Parker Nichols
Mr. and Mrs. Richard C. Snyder
Mr. Zale Oxenhandler
Mr. and Mrs. Richard F. Weinstock
Jerry Pauls
Mr. and Mrs. Edwin J. Euler
Mr. Johnston Pearcy
Mr. and Mrs. Jack D. Allen
Mrs. Elizabeth Phelan
Mrs. Mary Wahl
Mrs. Margaret Quinn
Mr. and Mrs. James E. Hanick
Miss Tracy Rankin
Mr. Ben W. Rankin
Anita J. Rassfeld
Estate of Anita J. Rassfeld
Mrs. Betty D. Reid
Mr. and Mrs. James B. Finn, Jr.
Mrs. Hale Rice
Mr. and Mrs. Michael J. Lacy
Margaret J. Ripper
Carol Albee
Fred and Pat Jacobus
Mr. and Mrs. Newell S. Knight, Jr.
Mrs. Clara LaVoise
Mr. and Mrs. Hershel Ross
Mrs. Mary Rose
Mr. Charles I. Rose
Mrs. Jean Rosebrough
Mr. and Mrs. Louis E. Sauer
Dr. Warren Rosen
Mr. Earl Rosen, Jr.

Dr. Harold G. N. Russell
Carole Herron
Richelle Remmers
Elaine Ricketts
Mr. and Mrs. J. G. Samuels
Mrs. Jane A. Jacobs
Helen C. Maurer
Mr. Henry Schlichter
Mr. William L. Tybura
Mr. Walter V. Schulze
Mr. and Mrs. George R. Bakker, Jr.
Eli Seigel
Diane Hurwitz
Margaret Hurwitz
Mr. Irwin Senturia
Mr. and Mrs. Lester R. Adelson
Mr. William Sharp
Mr. and Mrs. Chas. W. Rimmer
Mr. Robert Brookings Smith
Mr. and Mrs. Harvard K. Hecker
Mrs. Anne Smyser
Mrs. Joseph W. Boyle
Elinor M. Coyle
Mrs. Betty Quaife and Jill
Mr. and Mrs. Theodore R. Wolf
Dr. John A. Works
Dr. Samuel D. Soule
Anonymous
Ed Stallons
Mr. and Mrs. Donald H. Long
Mr. Jess Stern
Mrs. Francis W. Dennis
Mrs. Arnold Stifel
Mr. and Mrs. Joseph H. Bascom
Mrs. Gertrude Stockstrom
Ms. Dorothy Jacoby
Mrs. Blanche Thornton
Mr. Stephen P. Mullin
Mrs. Jules Van Raalte
Mrs. William H. Schield
Alsie Wade
Mr. and Mrs. Raymond Todd
Angeline A. Waluk
Postol Family
Mrs. Carol M. Winkelmeyer
Mr. and Mrs. Jim Alexander
Mrs. Charlotte Ballard
Mr. and Mrs. Edward H. Clayton
Mrs. Dwight W. Coultas
Mr. and Mrs. William Donnell
Miss Dorothy M. Friday
Mr. and Mrs. D. Goodrich Gamble
Mr. and Mrs. Charles Gaskill
Mr. and Mrs. Robert Hetlage
Mrs. Eric A. Jordan
Dr. and Mrs. Everett W. Kling
Dr. and Mrs. George A. Mahe
Jane McCammon
McCourtney-Breckenridge & Company
Mid-America Payment Exchange
Mr. and Mrs. Gerry Peterson
Margaret M. Planck
Mrs. Charles Powell
Mr. and Mrs. Art Seewoester
Mrs. C. C. Spiegelhalter
Mr. Christopher E. Winkelmeyer
Mrs. Mila Woodburn
Mr. and Mrs. Arthur P. Hegedus
Mrs. Claylain Zienty
Ms. Laura M. Ellis

Board of Trustees

John H. Biggs
President
Joseph H. Bascom
Rev. Lawrence Biondi, S.J.
Gerald D. Blatherwick
Stephen F. Brauer
William H. T. Bush
Jules D. Campbell
William H. Danforth
Richard K. Gaines
Robert R. Hermann
Rt. Rev. William A. Jones, Jr.
David W. Kemper
Charles F. Knight
Robert E. Kresko
William E. Maritz
James S. McDonnell III
Lucius B. Morse III
Mrs. Fred A. Oberheide
William R. Orthwein, Jr.
Mrs. Vernon W. Piper
Mrs. Lucianna Gladney Ross
Dr. Howard A. Schneiderman
The Hon. Vincent C. Schoemehl, Jr.
Sydney M. Shoenberg, Jr.
C. C. Johnson Spink
Mrs. Walter G. Stern
John K. Wallace, Jr.
O. Sage Wightman III

EMERITUS TRUSTEES
Howard F. Baer
Clarence C. Barksdale
Sam'l C. Davis
Dr. Thomas S. Hall
Henry Hitchcock
Anne L. Lehmann
A. Timon Primm III
Joseph F. Ruwitch
Louis S. Sachs
Daniel L. Schlafly
Warren M. Shapleigh
Robert Brookings Smith
Tom K. Smith, Jr.
Harriet Spoehrer
Harry E. Wuertenbaecher, Jr.

MEMBERS' BOARD
Mrs. Henry W. Dubinsky
President
Mrs. Rudyard K. Rapp
First Vice-president
Ms. Elaine A. Alexander
Second Vice-president
Mrs. Robert P. Elsperman
Secretary
Frederick H. Atwood III
Treasurer

DIRECTOR
Peter H. Raven

FRAGRANCE
Festival 88

A CELEBRATION OF SCENT!

May 1 through Mother's Day, May 8, 1988

Enjoy this week-long celebration of fragrance and flowers at Missouri Botanical Garden and Plaza Frontenac. See page 15 for a schedule of activities for the whole family.

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
P.O. Box 299
Saint Louis, Missouri 63166

SECOND CLASS
POSTAGE
PAID
AT ST. LOUIS, MO

Missouri
Botanical
Garden

Bulletin

MAY / JUNE 1988

VOLUME LXXVI
NUMBER THREE

Inside This Issue

4 Campaign for the Garden
On the first anniversary of the campaign we salute our volunteers and supporters.

5 Report from Ecuador
Oil fields and virgin forest seek to co-exist in the upper Amazon basin.

8 Gardening at the Garden
History and culture of boxwood, and a very special opportunity for gardeners.

12 Calendar of Events
Early summer is a busy time at the Garden, with evening hours adding to the enjoyment.

15 Ask the Answer Service
As the growing season moves into high gear, we offer some timely advice about fruits, vegetables, shrubs and lawn care.

16 From the Membership Office
A MoBot day, membership survey, and summer vacation ideas.

17 St. Louis Garden Tour
A popular event returns! An all-day tour for Members only.

20 For Younger Members
Learn how plants adapt to different environments and growing conditions.

21 Tributes
Friends and family are honored with a contribution to the Garden.

On the cover: The Gladney Rose Garden (pictured) and the Lehmann Rose Garden are in glorious bloom in late May and June.
—Photo by Pat Watson

The BULLETIN (ISSN 0026-6507) is published bi-monthly by the Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, MO 63110. Second class postage paid at St. Louis, MO. Subscription price $12.00 per year. $15.00 foreign.

The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $35 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Susan Wooleyhan, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

This Summer at the Garden

Summer brings with it vibrant growth and brilliant colors at the Garden, attracting thousands of Members and visitors each weekend. In response to this increased enthusiasm to enjoy the magnificent benefits of summer, the Garden extends its hours until 8 p.m. each evening starting on Memorial Day and continuing through Labor Day. We hope our longer hours will make it easier for Members, residents and vacationers to visit us. Our Garden Guide program has added eight new volunteers from St. Louis businesses to provide tours over the weekends and during our evening hours, ensuring that everyone will have an opportunity to learn about our institution regardless of when they are able to visit us.

The month of May signals the opening of the first Fragrance Festival, with the Garden and Plaza Frontenac joining together as co-sponsors of the eight-day celebration featuring entertainment, special workshops and lectures, benefits, and free gifts. The height of spring provides the perfect setting to celebrate fragrances and flowers. An exceptional example of a public institution cooperating with a private institution, the Fragrance Festival has been organized by the Members' Board under the enlightened and capable guidance of Nora Stern.

The Campaign for the Garden continues to move forward, reaching nearly $11 million of its $16 million goal. Members will be asked to join in this important fundraising endeavor soon. We are encouraged by the enthusiasm of our volunteer committee members and we have given special recognition to those who have worked diligently sharing information about the Garden and the campaign with prospective contributors. (See page 4.)

On behalf of the Board of Trustees, I invite each of you to join in the activities in May and June, including the Fragrance Festival; the special Milles exhibit in Monsanto Hall; Rose Evenings, our traditional yet very special time to view the panorama of roses at the height of their season; and the Garden Tour in mid-June.

Peter H. Raven

IN THE NEW GREENHOUSES: Director Peter Raven and Garden Trustee Robert Kresko, who is serving as chairman of the capital campaign, in the recently completed greenhouse orchid range.

IN MEMORIAM

Alan Peter Godlewski

1951-1988

Alan P. Godlewski, director of horticulture at the Garden, died unexpectedly on Saturday, February 27, 1988, of an acute pulmonary embolism. Mr. Godlewski was in Superior, Arizona, at the time, assisting the Boyce Thompson Southwestern Arboretum in a Museum Assessment Program administered by the American Association of Museums for the Institute of Museum Services, a federal agency. Mr. Godlewski was 36.

Mr. Godlewski attended the University of Washington, and held degrees from Washington State University and the University of California, Davis. He received many awards, including the Thomas Roland Medal of the Massachusetts Horticultural Society for outstanding achievement in horticulture, a Presidential Citation from the National Council of State Garden Clubs, and the Certificate of Recognition from the Institute of Museum Services. Prior to joining the Missouri Botanical Garden, he was superintendent of gardens at Filoli Center in California.

In tribute to his memory, hundreds of friends and associates joined Mr. Godlewski's family at the Garden on March 3, 1988, to pay their respects. Peter H. Raven, director of the Garden, delivered the eulogy.

Dr. Raven credited Godlewski with the virtual renaissance of the Garden's outdoor horticulture program. He said, "Alan came to the Garden in 1978, when the Japanese Garden was in its infancy and under his watchful eye guided it, along with Koichi Kawana, through its youth and brought it to its beautiful adolescence."

The rose gardens and the plantings around the Linnean House were also areas that received special attention by Mr. Godlewski. He was instrumental in designing many new gardens. In recent years, he supervised the development of the Jenkins Daylily Garden, the Kaeser Memorial Maze, the Dwarf Conifer Garden, the Azalea and Rhododendron garden and the Samuels Bulb Garden. Just before his death he completed supervision of the design phase of the Climatron renovation, which began in March.

As Dr. Raven pointed out in the eulogy, "Alan hated mediocrity. What he liked was taste, and I think the words written by the Roman stoic Seneca 2000 years ago epitomize that view. Seneca said, 'Human affairs are not so happily arranged that the best things please the most men. It is proof of a bad cause when it is applauded by the mob.' "

"Alan actually lived those words. He exhibited good taste, discrimination and excellence, in his life and in his work." Raven said, "Alan knew plants. He knew how they grew and why they grew. But at a more fundamental level, Alan was an artist who enriched the lives of everyone who knew him, and through his work, enriched the lives of many, many more people who did not."

"Those who were fortunate enough to know Alan can testify that he was an exceptionally warm, friendly and intelligent person. I personally found great satisfaction and joy in working with him for ten years," Raven said.

"Certainly Alan Godlewski died young," Raven continued. "But just as certainly, he accomplished a great deal. Seneca also said, 'Life, if you know how to use it, is long enough.' " Raven concluded that, "In our own lives, we would best honor Alan Godlewski's memory, and we would best honor ourselves, if we would resolve to love one another more and if we would try to do the very best of which we are capable."

MEMORIAL BENCH—A bench south of Flora Gate will be dedicated in memory of Alan Godlewski. An area he considered one of his favorites, it offers an exceptional view of the grounds, including many of its major gardens and other features that he helped design and implement. Tributes made in Alan's memory should be forwarded to the Development Office and will be used to prepare the bench.

The CAMPAIGN for the Garden

UPDATE: Commitment and Support

May 19 marks the first anniversary of the public announcement of the Campaign for the Garden. As of February 29, 1988, the drive had raised $10,880,072, about two-thirds of its $16 million goal. The Garden began preparing for the campaign several years ago and estimated that it would take three years of public activity to reach the goal. The splendid progress to date reflects the untiring efforts of many individuals (all but a few working on a volunteer basis for a cause important to the Garden's future), as well as the generosity of a community of donors who have responded to the Garden's appeal.

Capital and other special project campaigns must be carefully planned and executed. The Garden's planning process involved four stages before the first dollar was raised.

First, staff thoroughly assessed the need for different capital repairs and improvements, in accordance with priorities outlined in the 1973 Master Plan for the Garden's remaining physical development. Indeed, this campaign largely completes the improvements established in that document.

Technologically improved production greenhouses were identified as a major need. These would replace several deteriorating, inefficient structures dating from 1912 to 1914. Also of concern was the crumbling Mediterranean House, built during that same time, whose cramped quarters and poor environmental controls kept the temperate plant displays limited in scope and hard to maintain. In recent years it had become painfully apparent that the Climatron needed extensive refurbishment if it was to remain the gem of the Garden's public conservatories and one of St. Louis's and Missouri's proudest landmarks. Finally, the tremendous growth of gardening into America's foremost hobby had prompted the community to request comprehensive information, both visual and textual, on many subjects in home horticulture.

The second step in campaign planning was to test these assumptions of need through a feasibility study of the community's perceptions of and willingness to support these plans. Several groups were surveyed: Garden Trustees and other Members, local corporations and foundations, all of whose participation would be critical to the drive's success. These community leaders found the different needs addressed by the campaign to be compelling and key to the role the Garden plays and the services it delivers. Their input helped staff define the scope of the different projects to be undertaken, and determine that a campaign goal of $16 million had a high probability of success.

The third step was to present the final plan to the Board of Trustees for their approval, which was granted in September, 1986.

Finally, a steering committee of fifteen, drawn from the Board, was created to provide continuing guidance for the drive. From that committee, several subcommittees were created: to solicit gifts from the Trustees, from national corporations headquartered in St. Louis, from other local and national businesses, and from individual and foundation donors providing support at amounts of $1,000 and more. The committees are composed of Trustees, other Garden members and volunteers from the community. Each committee is given an ambitious goal and staff support services. They meet regularly to identify and assign gift prospects for cultivation and solicitation.

Campaign staff work with the committees to develop marketing materials, provide information on prospects, write formal proposals when required, and arrange meetings, events and publicity.

In many cases, donors are familiar with the Garden and support it in other ways, so the "sales job" is made easier. However, a major goal in every campaign is to involve new donors from the community, who may become initially interested in a particular facet of the drive and then generally interested in the Garden as they learn more about its work. In these cases, committee volunteers spend time explaining the Garden and how the campaign objectives tie into the Garden's long-term goals. This work is very important because bringing in new members to the Garden's "family" ensures a stable, growing base of support for the future.

Most of the gifts to date have come from this first group of people and institutions that are already involved with us, knowledgeable about and committed to our work. With this large base of support, we are now going confidently to the remaining Garden membership to ask for their help as well, and to the second tier of support—so important to future Garden growth—donors new to the Garden. This portion of fundraising activity is usually the most challenging and time-consuming, but also rewarding in terms of enlarging our base of support for the future.

This campaign presents the Garden with an opportunity to examine its basic purposes and create opportunities for its friends and members to become involved in supporting projects that will serve the entire community. We want to thank the following committee members for their wonderful work on the drive's behalf:

- *From the Board of Trustees:* Robert Kresko (steering committee chairman), Clarence Barksdale, John Biggs, William Bush, Jules Campbell, Robert Hermann, David Kemper, Charles Knight, Lucius Morse III, Margaret Grigg Oberheide, William Orthwein Jr., Warren Shapleigh, Tom Smith Jr., Johnson Spink, Nora Stern, John Wallace Jr. and O. Sage Wightman III.

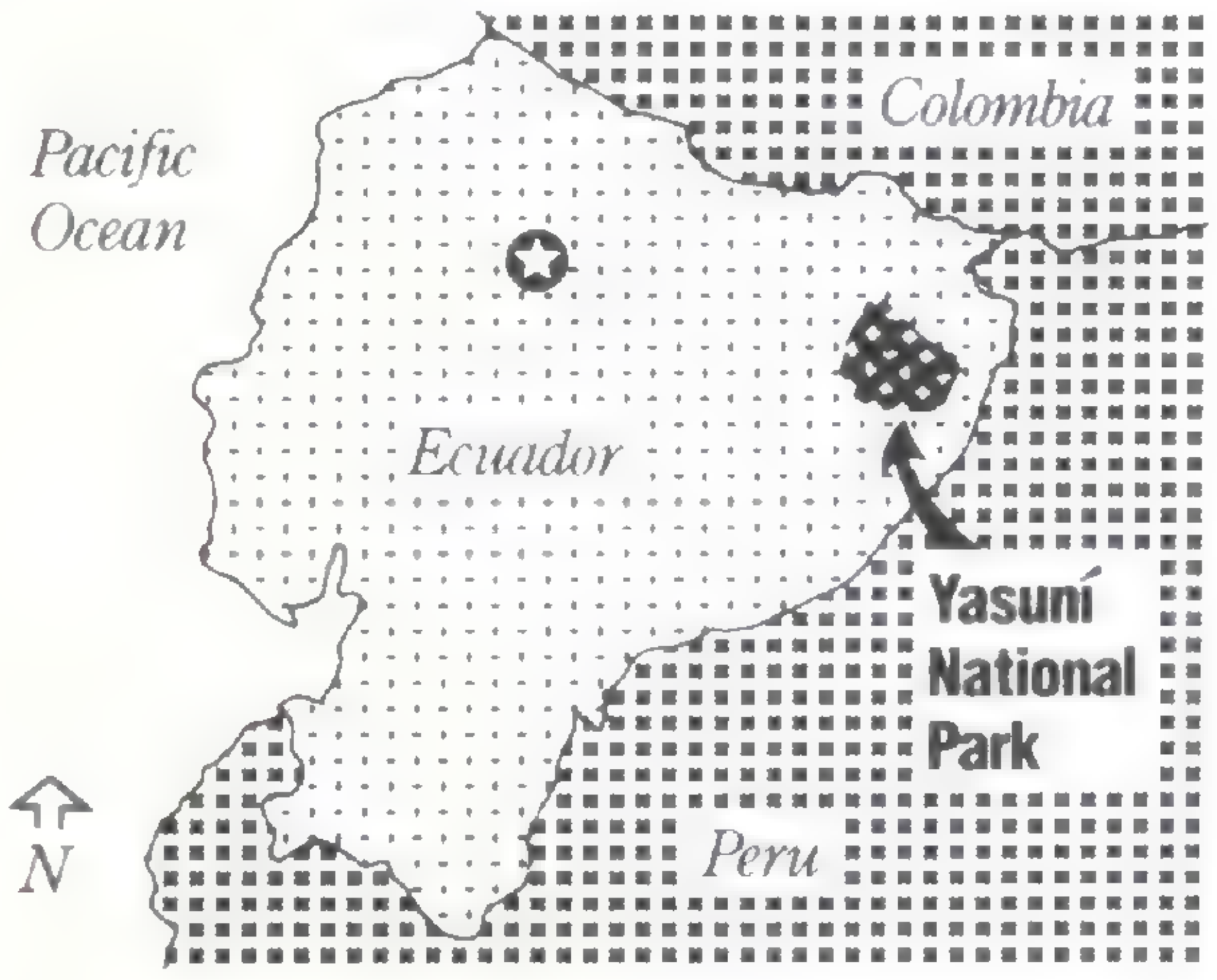
- *From the membership and community:* Mary Randolph Ballinger, Andrew Baur, Stephen Brauer, Parker Condie, David Culver, Alan Doede, William Dooley Jr., Henry Dubinsky, Robert Edwards, William Frank, W. Ashley Gray III, Miriam Kittner, June Kummer, James Mauze, Harry Mueller, Charles Oertli, Susan Rapp, Thomas Schlafly, James Schneithorst, Thomas Schweizer and John Thiebauth.

We also thank the many people and institutions who have so generously contributed financial support to the campaign thus far. ■

Oil company helicopter landing in the clearing where the exploratory oil well is to be drilled.

A FIELD TRIP IN ECUADOR/by David Neill

OIL WELLS, INDIANS AND RAINFORESTS OF THE UPPER AMAZON



AS THE BIG CARGO HELICOPTER roared eastward over Yasuní National Park, a part of the Amazon basin in eastern Ecuador, the vast sea of greenery beneath us appeared at first glance to be virgin rainforest, untouched by civilization. To our left, on the northern horizon, was the wide brown swath of the Napo River flowing east, bigger than the Mississippi and one of the many tributaries of the main Amazon. Behind us, 150 miles to the west, the Andes mountains rose abruptly out of the forested plain, marking the western edge of the Amazon basin. In the sky around us, patches of white clouds were piling up in the morning heat, foretelling afternoon rainshowers. And beneath us was the forest, an uneven carpet of different shades of green, a patchwork of many textures formed by the canopies of hundreds of species of trees.

I and my Ecuadorian colleagues, forester Walter Palacios and botanist Carlos Cerón, have been doing fieldwork together in the rainforests of Amazonian Ecuador for several years, but we are usually confined to the ground level; the bird's-eye view afforded by this helicopter trip in January 1988 was a rare treat. Peering out the windows of the helicopter, we excitedly pointed out to each other key features of the forest and tree species that we recognized from the air: the bright yellow crown of a flowering *Tabebuia* punctuating the surrounding green; the five-foot-long bean-pods dangling from the branches of giant 150-foot-tall *Cedrelinga* trees; and the groves of *Mauritia* palms on low ground which were sure signs of swampy areas. Beneath us, flying low over the forest canopy, were occasional flocks of multicolored macaws.

However, our first impressions of untrammeled wilderness were deceiving. As we flew eastward we noticed that there was a "hole" in the green forest carpet every few miles—small clearings, each atop a low hill, each with big white "X" marked in the center of the clearing. These, we knew, were small, recently cleared "helipads," where helicopters (smaller than the big machine that we were flying in) had landed in the previous months. They were the first visible signs of big changes soon to come in this part of the Ecuadorian Amazon.

The rainforests of the Amazon lowlands of eastern Ecuador lie atop vast reserves of petroleum. These resources were first exploited in the early 1970's, when, in a prodigious feat of engineering, a 250-mile oil pipeline was built from the newly developed oil fields in the Amazon, up over a 13,000-foot-high pass in the Andes, and back down to the port of Esmeraldas on the Pacific coast, from where the oil is exported to the United States, Japan, and Europe. A member of OPEC, Ecuador is a relatively small producer in comparison with the Arab countries, but oil revenues now account for 60 percent of its exports. In the Amazon lowlands of Ecuador's Napo province, 100,000 people now live in an area inhabited by a few thousand just 20 years ago. These settlers, mostly migrants from the overcrowded coastal and mountain regions of Ecuador, are farmers who were attracted by the road network that accompanied the development of the oil fields.

Now, the oil fields are being expanded to the south and east of the original settlements, into the sparsely inhabited, roadless forests of the Napo and Pastaza River valleys. Most of the remaining Amazon territory of Ecuador has been divided into concession blocks for petroleum exploration; multinational oil companies have bid for the concessions and are now investing hundreds of millions of dollars in drilling exploratory wells to test the petroleum production potential of each concession.

The helicopter that carried us over Yasuní National Park, and the helicopter pads below us carved into the otherwise undisturbed forest, were part of the petroleum development. Although the National Park was legally established in 1978, under Ecuadorian law the oil beneath the park can still be extracted

continued on next page

(and all petroleum is the property of the Ecuadorian government).

We travelled as guests of Conoco, an American oil company based in Houston that has the concession block that includes part of Yasuní Park. To drill an oil well in the middle of this wilderness, all the equipment is flown in by helicopter, and about 15 acres of forest are cleared for each well. We had been invited to one of the well sites by Doug McMeekin, Conoco's environmental consultant, and by Flavio Coello of the Ecuador National Park Service, who had joined us on this helicopter trip.

Our task was to make plant collections as the trees were being felled for the well site, and to prepare a description of the flora and vegetation at the site. Although the petroleum development will inevitably entail disturbance of the Yasuní Park ecosystem, both the Ecuador National Park Service and Conoco are taking steps to attempt to reduce the environmental impact of petroleum development. Conoco is financing the preparation of a management plan for the park, which until this year has been quite inaccessible even to the park superintendent Flavio Coello. Our inventory of the plants of this area will provide information needed for the park management plan and, we hope, help mitigate the disturbance caused by the oil wells and associated development.

The Amazonian part of Ecuador occupies only about two percent of the vast Amazon basin. Botanically speaking, Amazonian Ecuador is certainly one of the richest yet one of the least-explored areas in the entire region. Missouri Botanical Garden's research in this area, which I have been carrying out since 1985, includes several interrelated projects. With support from the U.S. Agency for International Development (USAID), and in collaboration with the Ecuadorian Forestry Directorate, Walter Palacios and I are carrying out a study of the tree species of the Amazon lowlands of eastern Ecuador. We are preparing an illustrated field guide, in Spanish, to the trees of this area for use by foresters, biologists, agronomists, and the general public. Our research is part of a larger forestry project, also supported by USAID, which is helping small farmers in the region grow trees for timber together with their crops of coffee, cacao or cattle pastures, as an additional source of income for the farmers and as a way of relieving the pressure for timber cutting from the virgin forests of the region. With support from the National Geographic Society, Carlos Cerón and I are doing an intensive inventory of the plants of a small part of the Ecuadorian Amazon: a small nature reserve in upper Rio Napo valley, about 150 miles upstream from Yasuní Park at the eastern base of the Andes. In practice, Palacios, Cerón and I often work together in the field and are able to function effectively as a team on our forays.

This visit to the interior of Yasuní National Park was a first for all three of us. Neither we nor any other botanist had ever before been in this part of Amazonian Ecuador. We were very interested to see how the structure and composition of the forest here differed from the forests that were more familiar to us, 100 to 150 miles further to the west near the base of the Andes. Also, we usually have great difficulty in making collections from the largest forest trees, which tower 150 feet or more above the ground, and from the vines and epiphytes that grow upon these giants. Often, to obtain botanical specimens, the trees must be climbed using special equipment, and even then some of the largest ones are quite inaccessible. At the oil well site, though, 15 acres of forest were to be felled with chain saws, so we had the opportunity to make some "easy" collections of the trees, vines and epiphytes as the forest was being cleared, without climbing.

The Conoco helicopter left us and our equipment in the clearing and clattered off in the distance, back to the oil company base camp at the end of the nearest road more than 70 miles to the northwest. The workers had begun clearing this site about two weeks earlier. A small Caterpillar tractor had been flown in piece by piece and assembled on the spot, and had already cleared a couple of acres surrounding the spot where the helicopter had landed. Several chain saws roared nearby as more trees were being felled. We carried our equipment to the makeshift worker's camp, which consisted of a rain shelter of plastic sheets stretched over a framework of poles and tables and beds of planks hewn with chain saws.

Then we set to work collecting plants. Keeping a safe distance from the chain saws and falling trees, we scrambled over the wreckage of the fallen limbs to search for flowers and fruits to include with the specimens. We placed our botanical treasures in large plastic sacks and hauled them back to the camp. There, we placed each specimen in a folded sheet of newspaper; we prepared 10 or more duplicate specimens of each plant collected. Besides the set that goes to Missouri Botanical Garden, specimens will be distributed to various herbaria in Ecuador and around the world. We wrote a collection number on each newspaper; this number was also recorded in our field record, along with a preliminary determination of each plant and additional information, such as height of the tree, flower color, etc. All this information will be included on the label attached to the dried plant specimen. We made bundles of newspapers containing plant specimens, placed these in plastic bags and soaked them in alcohol. This would keep the specimens from deteriorating for several

The bulldozer was brought in by helicopter in pieces and assembled on the spot.

weeks, until we could take them back to our laboratory in Quito, Ecuador's capital, and dry the specimens with electric plant driers.

We also searched the fallen limbs for orchids and other epiphytes. Dr. Calaway Dodson, a Garden curator who, like myself, resides in Ecuador throughout the year, is a specialist in the classification of orchids. We placed the collections of live orchids in gunny sacks to take back to Dr. Dodson in Quito. We later learned that a number of the orchids we collected in Yasuní are species previously unknown from Ecuador, and that several are species new to science.

On the second day of our field trip, we returned to the worker's camp to find that we had visitors: a group of five Waorani Indians. They were two young women in their teens, one of whom carried a baby in the traditional cotton shawl, a young man and a middle-aged man. The older man had a distended earlobe with a large hole; the earlobe holes had, in his younger days, held wooden plugs which were the mark of a Waorani warrior. The entire group was now, however, in western attire: the women in cotton dresses, the men in shorts and T-shirts.

Walter Palacios (at left) and Flavio Coello (at right) with a family of Waorani Indians visiting the camp.

The Waorani have lived for many centuries in the lands south of the Rio Napo. For nearly four centuries following the Spanish conquest of the region, the Waorani were not exposed to westerners. They were strict hunters and gatherers, had no agriculture, and kept to themselves in the forested areas away from the major rivers. They were known by the name given them by the Quichua-speaking Indians of the Andes: "Aucas", which means 'savage' in Quichua. The Waorani were feared, and the Quichuas, as well as Europeans, generally stayed out of Waorani territory until the 1950's, when the Waorani were contacted by Protestant missionaries.

Only one of the Waorani group spoke any Spanish at all—the young man who had some previous experience in the new oil camps that had appeared in his territory—and he spoke only a few basic words. None of us spoke Waorani, but we managed to communicate with gestures and signs. The cook offered our Waorani guests a lunch of lentil soup and rice—our standard fare. The guests sampled the food but did not finish it. The Waorani, like most Amazonian tribes, traditionally prepare their food without any salt at all (salt was unavailable in remote areas of the Amazon) and do not like our highly seasoned foods. The cook then gave our guests gifts of sugar and rice, and the Waorani departed for their home, a day's walk south through the forest. They made signs that they would return in a few days, but we did not see them again during our stay in Yasuní.

We remained at the site for ten days and made about 800 plant collections during that time. Each day, following the chain saws, we carried sackfuls of plants to camp and prepared the specimens. We found many species that were new to us. Mostly, these are plants that are typical of the central Amazon basin but do not occur at the extreme western edge of the basin at the base of the Andes, where we had done most of our previous fieldwork.

Drilling an oil well at a remote site like this requires a platform to be built of 7,000 thick boards, to support the oil rigs. The chain saw crews were put to work sawing up dozens of the downed tree trunks into rough-hewn boards. We were, at times, disheartened to see beautiful and valuable tropical hardwoods being used for such a purpose.

Indeed, with the recent petroleum activity within its boundaries, the fate of 1.5-million acre Yasuní National Park hangs in the balance. The exploratory wells indicate that there is a *lot* of oil under the park—probably enough to make full-scale development of the oil field economically feasible. This would probably entail construction of 120 miles of road through undisturbed forest, into the center of the park. Once the road and pipeline are built to take out the oil, can the forests be protected? Experience throughout the tropics shows that once a road is built, an area is quickly inundated with settlers searching for newly accessible territory to colonize. In this case, the Ecuador National Park Service and Conoco have vowed to keep colonists out of the park and limit access on the road. Will this be possible? Will the Waorani be able to continue their traditional way of life in the forests? There are many uncertainties about the fate of Yasuní Park—but if the ecosystem of the park is not protected, the remaining wilderness of the entire Ecuadorian Amazon will also disappear within a few decades.

Ten days after our arrival at Yasuní, the clearing of the oil well site was completed and no more trees were being felled. We had made as complete a collection as possible of the plants of this site, and it was time to pack up and take the specimens back to Quito with us. The workers helped us carry our dozens of sacks full of plants to the spot where the helicopter would pick us up. The big noisy machine arrived shortly and carried us off, back to the Conoco's base camp where air-conditioning, hot showers and the evening video movie awaited us. As we flew westward over Yasuní, I peered out the window and wondered how much longer the forest would be there. I hoped that our research efforts, when presented to the Ecuadorian government and to the Ecuadorian public, would help to generate a national awareness and a "wilderness constituency" among Ecuadorians that is the key to saving natural ecosystems in Ecuador. I hoped that Yasuní Park could still be saved. ■

Gardening at the Garden

Boxwood

Mary A. Gamble

The article that follows is the generous contribution of Mary Gamble, local boxwood student and enthusiast, and long-standing friend of the Missouri Botanical Garden. After many casual visits, Mary's first formal connection with the Garden dates to 1952 when her husband Goodrich enrolled her in a horticulture course here as a birthday gift. Soon thereafter, Mary joined the Herb Society, worked in the Garden's Herb Garden, and edited the book How to Grow Herbs in the Midwest, *now in its fourth printing and available in the Garden Gate Shop. In 1965 a cluster of boxwood boughs received as a Christmas gift sparked Mary's interest in the plant despite the oft-heard warning "you can't grow it here." Mary approached former Garden Director Edgar Anderson for advice, and he put her in touch with more experienced boxwood enthusiasts in other parts of the country. With this foothold, Mary helped organize a boxwood study group within the Herb Society and helped set up, in what is now the parking lot in front of the Ridgway Center, an experimental boxwood nursery, which presently resides at the west side of the Garden alongside the Home Demonstration Garden. The study group evolved into the Boxwood Society of the Midwest with the chief purpose of finding boxwoods tolerant of our climate. Mary emphasizes that this is no easy feat, but a stroll around the Garden reveals success. In 1986 Mary was awarded the Garden's Volunteer Service Recognition Award for 33 years of service. This winter she prepared and donated a set of boxwood herbarium specimens, an invaluable asset in identifying members of this difficult group. Mary's most obvious gifts to the Garden involve her knowledge and promotion of boxwoods, but beyond that, most horticulture staff members know that her and Goodrich's cheer, enthusiasm, and energy make us happier about our work.* —*George Rogers, Ph.D.*

YES, boxwood is beautiful, distinctive, elegant, the most versatile of the broad-leaved evergreens; and yes, it can be grown—selectively—in the Midwest. If any gardener has doubts, they can be dispelled at the Missouri Botanical Garden where *Buxus* can be seen throughout the Garden and in the boxwood nursery.

It is true that the Midwest is not the easiest place to grow boxwood. This is not surprising when one considers that of the 80 recognized boxwood species, more than half grow in tropical or subtropical regions. It takes a tough boxwood to withstand the vagaries of Midwestern weather. It also takes careful attention to the plant's cultural needs which, basically, are simple.

Possibly boxwood's greatest handicap in our region has been the persistence of the old gardener's tale that "boxwood is beautiful, but you can't grow it here." Who among us hasn't heard that? And who among us hasn't returned from a trip to Colonial Williamsburg or Mt. Vernon with an exquisite small boxwood that flourished for a season or two; then, when the inevitable "terrible winter" struck, watched it perish or suffer irreparable damage?

The open secret to success with boxwood in the Midwest is to seek out the hardy selections and to look upon boxwood not as a hedge or edging or group or grove, but as an individual plant. A good place to start is the Garden, where a test program to discover Midwest-hardy boxwoods has been going on since 1969.

The test program is a legacy from the late Edgar Anderson, a distinguished member of the Garden's scientific staff for 40 years and a dedicated boxwood enthusiast. In 1934, under the auspices of the Arnold Arboretum of Harvard University, he went on an exploratory trip to the Balkans looking for "hardy strains of holly, yew and box." Anderson's studies of world climates told him that in the Balkans what he described as our "chancy" weather was duplicated. He returned home with cuttings, and in 1957 *Buxus sempervirens* 'Vardar Valley' was introduced to nurserymen and gardeners. It proved hardy and handsome, possibly the greatest boxwood introduction of this century. Two other Anderson Balkans displayed in the Garden are *B. sempervirens* 'Nish' (a pair stands sentinel at Henry Shaw's tomb in the Mausoleum Grove), and *B. sempervirens* 'Henry Shaw', named in 1985 for the Garden's founder. Matched specimens flank the double gates in the Herb Garden south of Tower Grove House.

But the Anderson Balkans were not the first hardy boxwoods to reach the Garden. In 1962, as a direct result of the friendship of the late George Pring and the late Dr. Ernest Wilson (both originally from Kew Gardens), the Garden received a gift of a boxwood from Korea. Dr. Wilson found it growing near Seoul in 1919 and brought it and several others back to the Arnold Arboretum. He called it *Buxus microphylla* var. *koreana* and wrote Mr. Pring that he believed it "would prove to be one of the best for your region." This plant became the parent of a clone tolerant of the Midwestern climate. To quote the late Paul Kohl: "I've worked with *koreana* for 40 years and have never known it to be winter killed." Today, due to a recent Asian study that has shifted this boxwood from the species *microphylla* to the species *sinica* you will see it labeled *Buxus sinica* var. *insularis*. But it is the same *tough* utility box that bronzes in the winter, then greets spring in the freshest of yellow greens.

The Garden also had a brief experience with a hardy regional boxwood from Ste. Genevieve. Early in the 1920s, two plants of European origin were planted at the Flora Gate. But the smog that blackened and smothered St. Louis in those years damaged the boxwood so severely that they were transplanted to near the Manor House at the Arboretum at Gray Summit. Since those days St. Louis has cleansed its air, and a splendid specimen of *Buxus sempervirens*, transplanted from the Calvary Cemetery in our state's oldest city, has been selected as the parent of a clone registered and named *B. sempervirens* 'Ste. Genevieve'. It is representative of a number of handsome, classical clones from Missouri's "boxwood country": the tier of four counties—Ste. Genevieve, Perry, Cape Girardeau, and Scott—bordering the Mississippi River below St. Louis. Collectively, the Boxwood Society of the Midwest calls these boxwoods "the Ste. Genevieve strain."

A second Asian boxwood, *Buxus microphylla* variety *japonica*, reached the Garden in 1938. The late Dr. J. H. McFarland (whose printing presses in Harrisburg, Pennsylvania turned out handsome garden books) sent 100 cuttings of this plant, which had reached the west from Japan around 1860. These cuttings were propagated by Mr. Kohl in the Garden greenhouses for use in the displays he designed for the Garden's seasonal flower shows. When he relinquished the shows, he gave the japonicas—which he had held for 20 years in small clay pots by annual root pruning—to the Boxwood Society to place in its nursery. There, after a two-year settling-in period, they grew at the fastest rate (up to 7 or 8 inches a year) of any boxwood. A number can be seen approaching 6 feet in the nursery. Several specimens can also be seen in the Japanese Garden, many planted beside stones whose shapes they have been pruned to complement in a manner prescribed by Koichi Kawana, designer of Seiwa-En.

These are only four of the stalwart, distinctive, and useful boxwoods which, given proper siting and reasonable care, can be planted with confidence by Midwestern gardeners.

The group of Midwest-hardy boxwoods in the boxwood nursery run the gamut of shapes and sizes that make this genus so versatile and useful in garden design. There is a boxwood for every garden, formal or informal, large or small. The sizes of boxwoods run from dwarf to large, or as low as 20 inches high to as tall as 15 or 20 feet. The shapes may be mounded, pyramidal, conical, spherical, columnar (not recommended for Midwest), arboreal, or tree form.

Pruning boxwood in the Japanese Garden, Seiwa-En.

The "greens" of boxwood's foliage range from light through medium to dark green, sometimes with a blue cast. Other boxwoods—principally those of Asian ancestry—are in the yellow-green range and may be light, medium, or dark yellow green. Very few are bicolor, green edged with white, silver, or gold. Leaf surfaces are generally glossy, but they may be matte, puckered, blistered, smooth or downy. Their hard surface catches the play of light and shadow as it moves across a garden.

Most boxwoods bloom, but it is seldom spectacular. Boxwood's beauty is year-round, not seasonal. In winter, when snowflakes fall and gather on the green leaves, one is reminded of the Japanese concept that snows are the flowers of winter.

Boxwood leaves are opposite on the stems. This differentiates *Buxus* from the "Holly box," as *Ilex crenata* 'Convexa' is called. Its leaves, like those of all hollies, are alternate.

Boxwood's culture, as mentioned above, is basically simple. Boxwood must have good drainage. It needs protection—

continued on next page

Cuttings of Ten Selected Boxwoods Offered to St. Louis Gardeners

Wednesday, June 22, 1988 *(Rain Date, Wednesday, June 29)*

In response to an increasing number of requests from local gardeners, the Boxwood Society of the Midwest will make available cuttings of ten named and registered boxwoods that have proved hardy in the boxwood nursery at the Missouri Botanical Garden. The group was selected for hardiness and for range of forms and sizes at maturity. Among them there is a boxwood for every garden.

On June 22, "St. Louis Cuttings Day," members of the Society will go to the Boxwood Nursery *early* to fill individual orders. All cuttings will be dipped in a solution of Captan (a fungicide) and Safer's Solution (an insecticide) before being placed in plastic bags with an accompanying label. Orders may be picked up between 12 noon and 3 p.m. at the Boxwood Nursery (adjacent to the Home Demonstration Garden). With the order, each gardener will receive instruction sheets for home propagation and basic boxwood culture. If the gardener's time permits, he or she may take a conducted tour of the nursery.

Orders should be mailed to Mrs. George E. Penhale, 304 Carson Road, Ferguson, Missouri 63135 by Wednesday, June 1. Cuttings of each boxwood are sold in mixed or uniform sets of three, and each customer is limited to one set at $1 each. Checks payable to the *Boxwood Society of the Midwest* must accompany each order. Please include your telephone number. Each order will be acknowledged. The Society reserves the right to substitute comparable cuttings. The Society can accept only 50 orders, which will be filled in the order received.

Boxwoods of European origin:

- *Buxus sempervirens* 'Belleville', a handsome plant whose elliptic (oval) leaves are a strong, deep green. It makes a very large shrub suited for specimen or group plantings in larger space.
- *Buxus sempervirens* 'Inglis' has uniformly lanceolate (lance-shaped), strong medium-green leaves. It grows into a medium-sized shrub suitable for specimen or group plantings, or for hedging.
- *Buxus sempervirens* 'Joy' is a joy. Its strong green, lanceolate leaves are so uniform in size that it has an exceptionally neat look. Its mature size in the medium range makes it suitable for many garden design purposes.
- *Buxus sempervirens* 'Mary Gamble' is another "neat" boxwood. Its lanceolate leaves are a strong green. It is suited to many garden spaces, large or small.
- *Buxus sempervirens* 'Myrtifolia' is an old boxwood, somewhat less hardy than others on this list. We include it because of its elegance. Its medium-green leaves are both lanceolate and elliptic. It is suited to formal treatment. It should have winter protection.
- *Buxus sempervirens* 'Pullman' is another elegant boxwood, characterized by the depth of green of its uniformly lanceolate leaves. It breaks dormancy late, which makes it less susceptible to injury from late freezes. Its medium size suits many gardens.
- *Buxus sempervirens* 'Salicifolia' is sometimes called the "willow box." Its lanceolate leaves vary in size and are yellowish green. Distinctive and graceful, it grows into a large specimen shrub that requires space.
- *Buxus sempervirens* 'Vardar Valley' is distinctive on two counts: its foliage has a fleeting hint of blue, and its flat-topped mounded form is somewhat unusual. It is more rugged than beautiful. This cultivator grows slowly but will, in time, reach 15 feet in width, 3 to 4 feet in height.

Boxwoods of Asian ancestry:

- *Buxus microphylla* var. *japonica* has large, yellow-green leaves that are obovate (inversely egg-shaped) and have a high gloss. They bronze in winter, slightly or heavily, depending upon the severity of the season and whether the plant is in full sun or partial shade. It is fast-growing (as much as 6 to 8 inches a year) and has a casual look. It makes a large shrub, suitable to larger space.
- *Buxus microphylla* var. *japonica* 'Morris Midget' is a dwarf. Its small, obovate leaves are yellow-green and bronze somewhat lightly in winter. It grows slowly into a low, dense, slightly uneven mound, suitable for edging or as a specimen in small space.

You are invited to "preview" these boxwoods at your convenience in the nursery. The large sign at the southeast corner of the nursery tells you where to find the individual plant labels. On clear Wednesday mornings a "work crew" of Society members is usually busy, but anyone will be glad to stop work to take you through the nursery and to answer questions about our Society, whose membership is open to all.

BOXWOOD continued

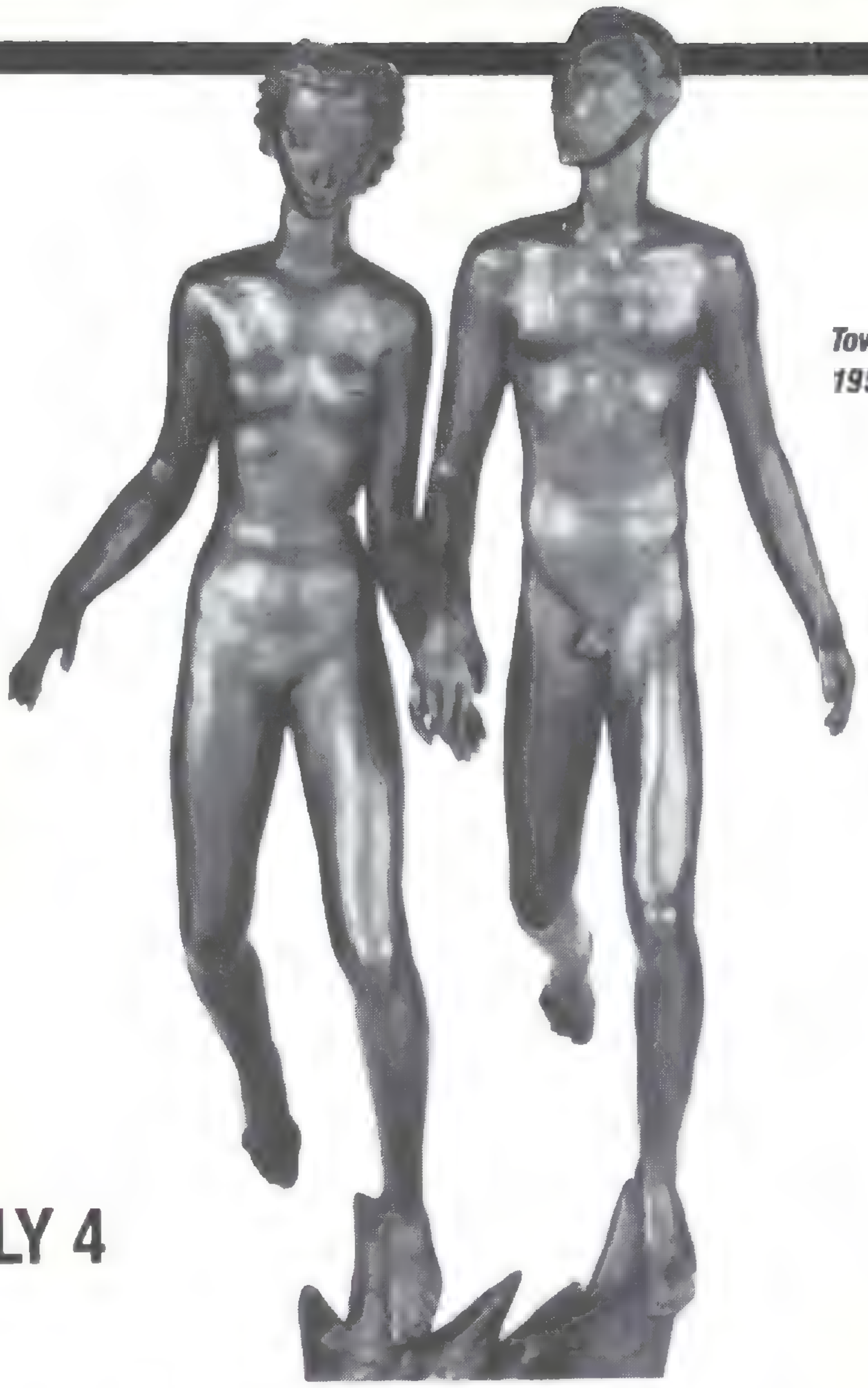
fence, wall, berm, conifers—from the prevailing winter wind, which in St. Louis blows from the southwest, straight off the Great Plains. Boxwood will grow in full sun or in high-pruned, dappled shade. It is not fussy about pH; good garden soil will do nicely, but heavy clay should be avoided. It responds to a regular watering schedule when rainfall is deficient and to feeding every two or three years. It should be pruned carefully every couple of years with "touch-ups" as needed; and if storm or other damage occurs, appropriate therapeutic pruning should not be delayed. The gardener should keep an eye out for two pests: spider mites and leaf miners. The Garden's "Answer Man" can tell you what to do about these.

There is no native North American boxwood. The first authenticated planting of *Buxus* in the American Colonies was in 1652 in a manor house garden on Long Island. Settlers from England, France, and Holland brought cuttings of the plants they had cherished in their homelands. In 1753 Carolus Linnaeus described these plants in his *Species Plantarum* as *Buxus sempervirens*, the "common box" of Europe, with two varieties: *Buxus sempervirens* variety *arborescens*, a tree, and *Buxus sempervirens* variety *suffruticosa*, a dwarf. Boxwood moved westward with the pioneers.

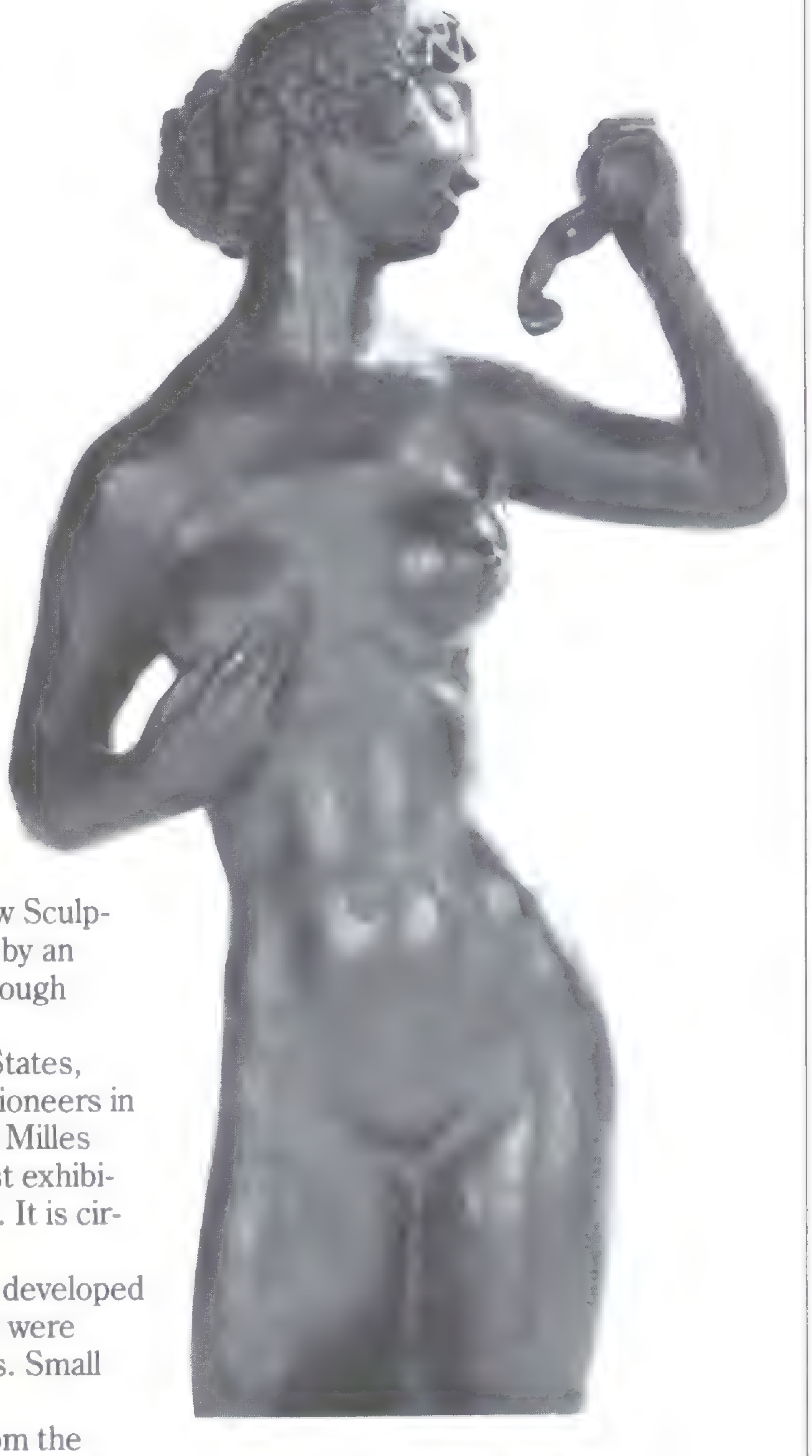
Boxwood has graced gardens ever since the Persians conceived of the "pleasure garden" some thousands of years ago. Boxwood was integral to the gardens of Ancient Greece and Rome. When Rome fell to the Vandals in 476, the skills and art of gardening were saved in the Christian monasteries that were built across Europe in the Middle Ages. Boxwood was planted in many of the cloistered gardens. When pleasure gardens returned with the Renaissance, boxwood was given its rightful role. Boxwood in a garden bridges the gardens of yesterday, today, and tomorrow.

The Boxwood Society of the Midwest invites you to look for and study the boxwoods throughout the Garden, and to visit the nursery where the testing program continues. Most of the plants now in the nursery have proved their Midwest hardiness. Some, less "tough," may need special care and protection. A few are still question marks. But the collection offers proof that it is possible to enjoy boxwood in the Midwest if the gardener selects with care and follows common sense.

—Mary A. Gamble



Toward Another World
1952



Girl with Apple
1913

EXHIBIT
MAY 22-JULY 4
1988

CARL MILLES

SCULPTURE AND DRAWINGS

The forthcoming installation of seven sculptures by Carl Milles in the new Sculpture Garden (between the Flora Gate and the Climatron) will be augmented by an exhibition of 16 bronzes and 15 drawings by Milles, on view from May 22 through July 4 in Monsanto Hall, Ridgway Center.

The show is an event of the New Sweden '88 Celebration in the United States, which commemorates the 350th anniversary of the settlement of Swedish pioneers in what became Delaware. It was organized by Millesgården, the repository of Milles works near Stockholm that he gave to the country of his birth, and is the first exhibition drawn entirely from art at Millesgården, to be presented in this country. It is circulated by The Trust for Museum Exhibitions.

The touring bronzes are casts from small plaster models in which Milles developed his themes for enlargement into full-scale plaster models, which sometimes were revised and refined. From these, molds were taken for the final bronze casts. Small models and drawings show the artist's ideas in stages of germination.

The Sculpture Garden figures also are from Millesgården—new casts from the sculptor's full-scale models preserved there—and were commissioned for exhibition at the Missouri Botanical Garden by the Gateway Foundation of St. Louis. The two events will give Garden visitors a broad view of preparatory and finished work that Milles preserved at his estate.

Bronzes in the Monsanto Hall exhibition will include a model of the *Folke Filbyter* equestrian in the St. Louis Art Museum collection, and miniatures of five angel musicians in the *Fountain of Faith* at Falls Church, Virginia. Three of these musicians, full size, are in the Gateway Foundation ensemble. Two other pieces from this fountain's 38 figures are *Girl Awakening* and *Toward Another World*, the latter with male and female figures hovering above the water surface, hand in hand.

Complementing two figures in the Sculpture Garden from the Stockholm *Orpheus Fountain* by Milles will be the study model for a third figure from the same composition, *Girl With Falling Leaf*. Milles displayed notable aptitude for making figures seem to be airborne, a quality first seen in this fountain.

by George McCue

Missouri Botanical Garden

CALENDAR OF EVENTS

May-June 1988

Fragrance
Festival 88

MAY 1-8 / SUNDAY-SUNDAY

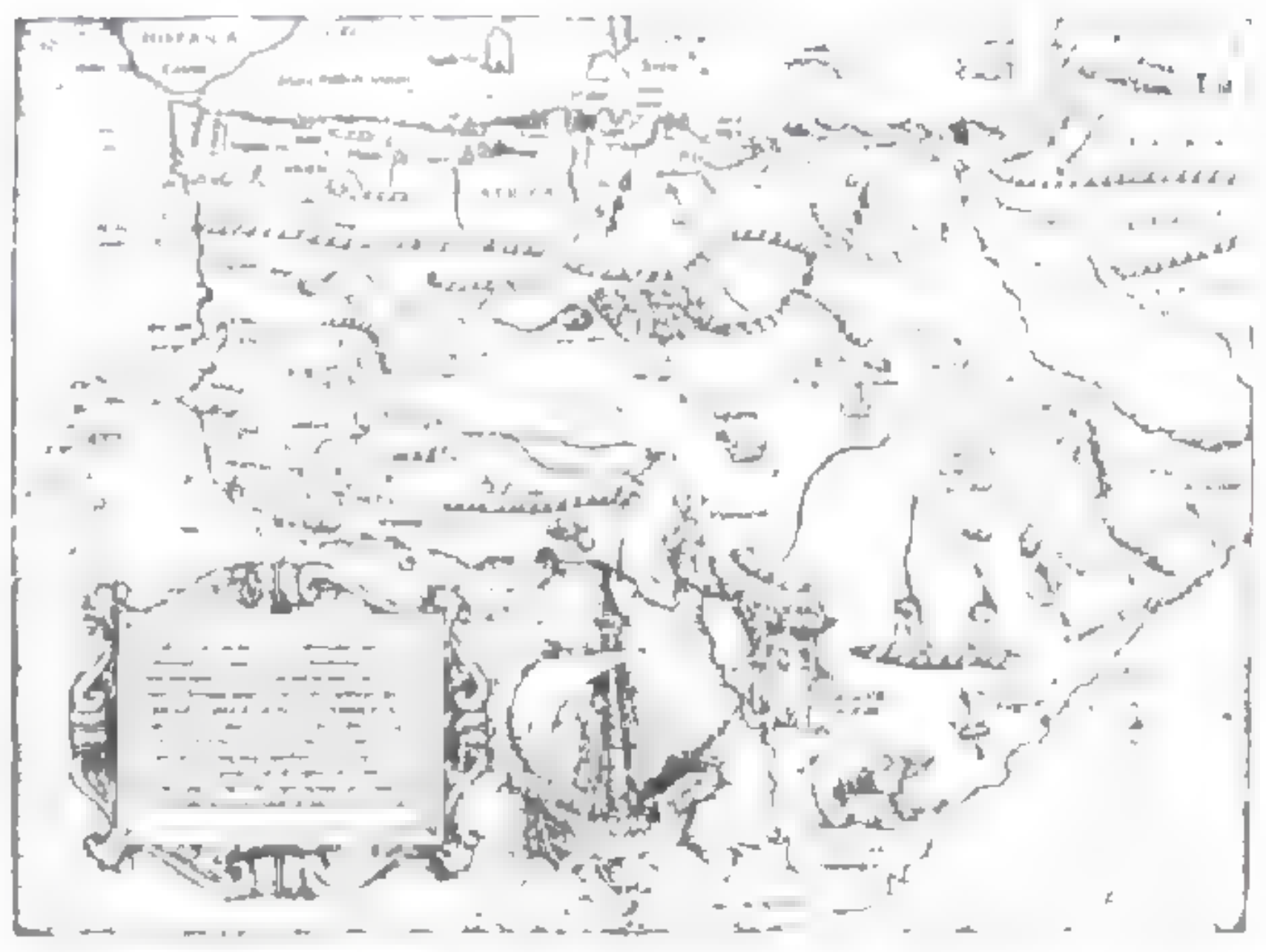
Fragrance Festival '88: A Celebration of Scent

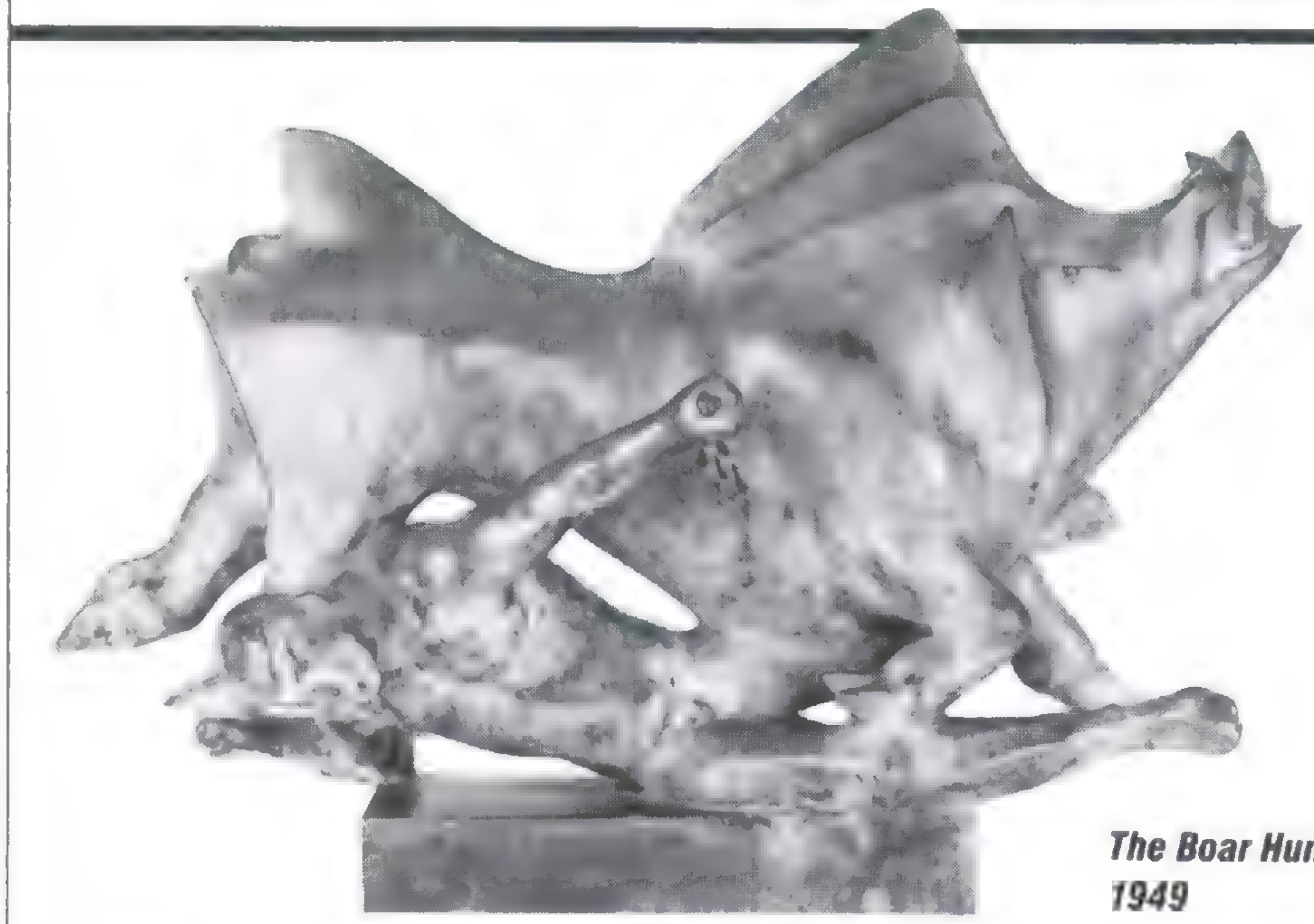
You won't want to miss this week-long celebration of fragrance and flowers, featuring exhibits, lectures, workshops, tours and special gifts for Mother's Day. Sponsored by the Garden and Plaza Frontenac with the assistance of *St. Louis Magazine*. For a complete schedule of activities, dates, times and ticket information, see the brochure mailed recently to Members, or pick one up at the Garden or Plaza Frontenac.

MAY 14–15 / SATURDAY-SUNDAY

Botany Field Days: "Partners in Exploration and Research"

10 a.m. to 5 p.m., both days, John S. Lehmann Building. Open house of the herbarium and library. Exhibits highlighting the Garden's collaboration with the National Cancer Institute to collect African plants to be screened for possible anti-cancer agents. Free. See May 15 for additional details.





The Boar Hunt
1949

MAY 22–JULY 4 / SUNDAY-MONDAY

Carl Milles Exhibit

9 a.m. to 5 p.m. daily (open until 8 p.m. May 30 to July 4), Ridgway Center. Display of sculptures and drawings by the noted Swedish sculptor. Free. See Page 11.

MAY

1 SUNDAY

Spring Sale

9 a.m. to 5 p.m., Garden Gate Shop and Ridgway Center parking lot tent. Last day for great discounts on plants and gifts.

Walking Tour

2 p.m. Meet at Ridgway Center ticket counter. See what is blooming with a guided tour of the grounds led by Garden Guides. Free. Call 577-5140 for reservations.

3 TUESDAY

Walking Tour

1 p.m. Meet at Ridgway Center ticket counter rain or shine. Learn more about the Garden with a tour of the grounds led by Garden Guides. Free.

5 THURSDAY

Smithsonian National Associates Lecture and Seminar Program: "The Fate of the Tropical Rainforests"

1 to 4 p.m., Shoenberg Auditorium. Garden director Dr. Peter Raven and Dr. Michael Robinson, director of the National Zoological Park, will join forces to discuss the importance of scientific and conservation efforts currently underway in the tropics. Tickets are $20; call 577-5125 for ticket availability.

10 TUESDAY

Walking Tour

1 p.m. See May 3 for details.

14 SATURDAY

Botany Field Days

10 a.m. to 5 p.m., Lehmann Building. *See highlight.*

14 *continued*

Dahlia Sale

9 a.m. to 5 p.m., Spoehrer Plaza
Lots of hearty and beautiful dahl
plants on sale by the Greater
St. Louis Dahlia Society.

Walking Tour

1 p.m. Meet at Ridgway Center ticket counter for a tour of the grounds led by Garden Guides. Free.

15 SUNDAY

Botany Field Days

2 p.m., Shoenberg Auditorium.
Presentation by Dr. Gordon Crag
of the National Cancer Institute.
Free. 10 a.m. to 5 p.m., Lehman
Building, exhibit continues.
See highlight.

Dahlia Sale

9 a.m. to 5 p.m., sale continues. See May 14 for details.

Walking Tour

2 p.m. See May 1 for details.

17 TUESDAY

Walking Tour

1 p.m. See May 3 for details.

19 THURSDAY

Slide Lecture: "Royal Botanic Gardens, Sydney"

1:30 and 7:30 p.m., Shoenberg
Auditorium. John Forlonge, foren
of plant production at the Royal
Botanic Gardens, Sydney, Austra
Free.

20 FRIDAY

Purple Martin Evening

6:30 p.m., Shoenberg Auditoriun
and grounds. Seventh annual salu
to these popular birds, with lectu
film, slide show and tour of the G
den's Purple Martin neighborhoo
led by W. Ashley Gray III. Free.

SATURDAY

ticulture Society Show

n to 5 p.m., Ridgway Center.
ibit of flowers, vegetables,
ennials and house plants. Free.

king Tour

m. See May 14 for details.

SUNDAY

ticulture Society Show

m. to 5 p.m., exhibit continues.
May 21 for details.

TUESDAY

king Tour

m. See May 3 for details.

28 SATURDAY

Rose Society Show

Noon to 5 p.m., Ridgway Center. Exhibit features many varieties of cut roses. Free.

Walking Tour

1 p.m. See May 14 for details.

29 SUNDAY

Rose Society Show

9 a.m. to 5 p.m., exhibit continues. See May 28 for details.

31 TUESDAY

Walking Tour

1 p.m. See May 3 for details.

MAY 25 & 26 / WEDNESDAY & THURSDAY

Rose Evenings

What better way to spend a lovely spring evening! Join us for supper and a stroll through the rose gardens. Watch your mail for more information and a reservation form.

MAY 30-SEPTEMBER 5 / Evening Hours at the Garden

The Garden will be open until 8 p.m. every day, Memorial Day through Labor Day. Come enjoy the long summer evenings with a quiet stroll.

JUNE

WEDNESDAY

ic Fest

p.m., Cohen Amphitheater.
e again the Garden will host a
es of outdoor concerts featuring
classical, contemporary and
musicians. Admission $3. Call
5125 for more information.

SATURDAY

king Tour

n. See May 14 for details.

Society Show

n to 5 p.m., Ridgway Center.
.

SUNDAY

king Tour

n. See May 1 for details.

7 TUESDAY

Walking Tour

1 p.m. See May 3 for details.

8 WEDNESDAY

Music Fest

7:30 p.m. See June 1 for details.

11 SATURDAY

African Violet Show

9 a.m. to 5 p.m., Ridgway Center. The Metropolitan St. Louis African Violet Council holds it 34th annual judged show and sale. Free.

Walking Tour

1 p.m. See May 14 for details.

12 SUNDAY

African Violet Show

9 a.m. to 5 p.m., exhibit continues. See June 11 for details.

14 TUESDAY

Walking Tour

1 p.m. See May 3 for details.

continued on next page

JUNE 12 / SUNDAY

Second St. Louis Garden Tour

A day-long tour of very special private gardens, for Garden members only. Watch your mail for more details and ticket information. See page 17.

MAY-JUNE

COURSES & LECTURES

AT THE GARDEN

NOTE: Class descriptions and registration information for these courses can be found in the *1988 Spring Courses and Lectures* and *1988 Summer Programs* brochures which were mailed to all Members. For more information call the Education Division at 577-5140.

MAY

4 (W) Native Missouri Tree Walk
5 (Th) Fragrant Plants for Your Garden
7 (Sa) Pretty as a Posey
10 (Tu) New & Little Known Perennial Treasures
11 (W) Advanced Watercolor *(6 sessions)*
12 (Th) How Flowers Work *(2 sessions)*
14 (Sa) Breakfast with the Birds
16 (M) Beyond Beauty: Flowers in Art *(2 sessions)*
17 (Tu) Vietnamese Cuisine *(2 sessions)*
18 (W) English Woodland Garden Walk
21 (Sa) Pruning in the Japanese Style
Green Gardener
24 (Tu) St. Louis' Private Places
31 (Tu) Evening Walk in the Japanese Garden

JUNE

1 (W) Evening Walk in the Japanese Garden
9 (Th) Basic Watercolor Techniques *(4 sessions)*
14 (Tu) Petals and Pollinators Walk
15 (W) Fountains, Pools and Sculpture Walk
Tree and Shrub Identification *(9 sessions)*
21 (Tu) Rock Garden Walk
28 (Tu) Exploring Oriental Plants Walk

AT THE ARBORETUM

MAY

7 (Sa) Migrating Birds
Basket Making
14 (Sa) Nature Photography
15 (Su) Nature's Delicacies and Dyes
28 (Sa) Nature of Insects

JUNE

4 (Sa) Discovering Shaw Arboretum
11 (Sa) Trees of the Arboretum

JUNE

15 WEDNESDAY

Music Fest
7:30 p.m. See June 1 for details.

18 SATURDAY

MoBot Club "Dad's Day"
Shaw Arboretum. A special tribute to Father's Day for junior Members and their families. See page 16 for more details.

Walking Tour
1 p.m. See May 14 for details.

Hardy Lily Show
Noon to 5 p.m., Ridgway Center.

19 SUNDAY

Walking Tour
2 p.m. See May 1 for details.

Hardy Lily Show
9 a.m. to 5 p.m., exhibit continues. See June 18 for details.

21 TUESDAY

Walking Tour
1 p.m. See May 3 for details.

22 WEDNESDAY

Music Fest
7:30 p.m. See June 1 for details.

Boxwood Society "Cuttings Day"
Noon to 3 p.m., Boxwood Nursery. See page 10 for more information.

25 SATURDAY

Walking Tour
1 p.m. See May 14 for details.

26 SUNDAY

"Green Leaves... Golden Blossoms"
Noon to 4 p.m., Ridgway Center and grounds. St. Louis Chapter Hadassah celebrates Israel's 40th anniversary year. Tree seedlings, musicians, mimes, travelogues and more. Free.

Daylily Show
9 a.m. to 5 p.m., Ridgway Center.

28 TUESDAY

Walking Tour
1 p.m. See May 3 for details.

29 WEDNESDAY

Music Fest
7:30 p.m. See June 1 for details.

16 THURSDAY Tour of New Greenhouses

5:30 p.m., meet at Ridgway Center ticket counter. A special guided tour of the new horticultural greenhouses. For Members only. Free.

Ask the Answer Service

Caterpillar Control

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at ***577-5143.***

Q. What can I spray to control the green worms that are eating holes in my broccoli leaves?

A. Those are cabbageworm caterpillars and they are easily controlled by spraying *Bacillus thuringiensis* at 7- to 10-day intervals. Sold under several names, including B.T., Dipel and Thuricide, this bacteria harms only caterpillars and is safe to man and plants.

Q. What's this about tomatoes and walnut trees? Do they really cause tomato plants to die?

A. Yes, they can. Walnut roots and fallen leaves produce a substance called juglone that poisons other plants. Avoid planting your tomatoes within fifty 50 feet of a black walnut tree.

Q. I have an old tulip bed that I would like to convert to other uses. Can I move it after they finish blooming?

A. Yes. As the flowers fade, pinch off the spent blooms. The plants may then be lifted with as little root disturbance as possible and "heeled in" to temporary quarters elsewhere in the garden. Place them where they are shaded from the hottest sun (a lath screen works well) and where they can be watered regularly. Allow the foliage to mature, yellow, and dry before digging the bulbs and removing the leaves. Store the tulips through summer by hanging them in net bags in a cool, dry place with good air circulation.

Q. Last year my tomatoes developed a problem diagnosed as "blossom-end rot." What can I do to prevent this problem again?

A. Blossom-end rot infection appears on the bottom of the fruit as it ripens and causes the tomato to spoil. It develops from a calcium deficiency in the plant that results from a lack of even moisture in the soil. The best cure is prevention. Don't let your plants become stressed from a lack of water. Water during dry spells and apply an organic mulch once soils have warmed. Maintain a three- to four-inch layer throughout the growing season. A product called Tomato Saver contains a water-soluble form of calcium and can be applied to your plants once fruit has set. Tomato Saver is on sale in the Garden Gate Shop.

Q. My Bee Balm has this unattractive fuzzy white fungus all over it. What can I do for this?

A. Your Bee Balm (*Monarda didyma*) has a powdery mildew fungus. *Monarda* is very susceptible to this problem and you can reduce the chance it will occur if you thin your clumps each spring, avoid overhead watering and be sure to plant in full sun.

Monarda didyma 'Gardenview Red' has some resistance to powdery mildew, as does the Wild Bergamot, *Monarda fistulosa*. As soon as this fungus begins to develop, you may prevent its spread by spraying with the fungicide Benlate. Be sure and read the label for proper application.

Q. How large will Witchhazel grow? I'm looking for some large shrubs for several locations in my garden.

A. Among the Witchhazels, the largest is the common Witchhazel (*Hamamelis virginiana*) and it may grow to about 20 feet in height and have an equal spread. Depending on how you choose to prune, it may be grown as a small tree or a large shrub. *Hamamelis ×intermedia* is a hybrid having roughly the same dimensions. The cultivar 'Arnold Promise' does well here in St. Louis. Both the Japanese Witchhazel (*Hamamelis japonica*) and Vernal Witchhazel (*Hamamelis vernalis*) have smaller proportions. All these species share their delightfully scented flowers and colorful fall foliage in common, making them versatile, though underused assets in our gardens.

Here are several suggestions for that "large shrub" niche in your garden. The Redbud (*Cercis canadensis*) is actually a small tree, but its low-branching habit provides a shrublike effect. For something a little different, search out forma *alba*, a white-flowered shrub.

Two interesting and unusual Dogwoods are the Cornelian-cherry (*Cornus mas*) and the Pagoda Dogwood (*Cornus alternifolia*). The Cornelian-cherry bears yellow flowers in March and the blossoms last for about three weeks. A very creative use of this shrub can be seen in the Herb Garden here at Missouri Botanical Garden, where two specimens have been trained as formal standards.

The Pagoda Dogwood is not as spectacular in bloom as its cousin the Flowering Dogwood (*Cornus florida*) but its horizontal branch structure also lends an interesting texture to the winter garden.

Lastly, the Fringetree (*Chionanthus virginicus*), one of the showiest Missouri native shrubs, displays drooping panicles of off-white flowers reminiscent of fringes, making it an aptly named plant.

TIMELY TIPS:

- Deadhead bulbs and perennials as flowers fade.
- Repeat plantings of crops such as corn, beans and radishes to extend the harvest season.
- Thin seedlings to proper spacings before plants have a chance to crowd each other.
- Thinning overloaded fruit trees will result in bigger and better fruits at harvest time.
- Mow lawns at the proper heights. Trim Zoysia at one-half to one inch high, and Bluegrass and Fescue lawns at about three inches, or as high as the mower will cut.
- Cultivate strawberries to control weeds and apply thick mulches to maintain control.
- As soon as cucumber and squash vines start to "run," begin insecticidal treatments to control cucumber beetles and vine borers.

—Chip Tynan, The Answer Service

FROM THE MEMBERSHIP OFFICE

MoBots Have Their Day!

MoBots, the youngest members of the Garden, do have their fun! An upcoming event of interest to all MoBots will be Dad's Day at the Arboretum, Saturday, June 18. MoBots will have the opportunity to visit Shaw Arboretum in Gray Summit with their dads in commemoration of Father's Day. MoBots are encouraged to explore the Arboretum with their dads (moms, grandparents and others are welcome too). Special MoBot surprises will be given away. The Arboretum hours are 7:00 a.m. to sundown. MoBots should watch the mail for more information.

Membership Survey

A random selection of Garden members will be receiving a membership survey in the mail. Please take a few moments to share your opinions about your Garden membership. As always, your ideas are important and shape the future of your membership program at the Garden.

Make Gift Giving Easy!

Give a Garden membership for an upcoming special occasion or to that person who has it all. Garden memberships are enjoyed in every season by people of all ages and interests. Use the handy coupon below or call 577-5118 to charge your gift. A personal greeting will be sent on your behalf.

NEW OFFICERS: Garden Trustee president John Biggs (far left) and director Peter Raven (far right) with 1988 Members' Board officers (left to right): Sue Rapp, first vice president; D'Arcy Elsperman, secretary; Ted Atwood, treasurer; Ellen Dubinsky, president; and Elaine Alexander, second vice president.

IN YOUR TRAVELS...

Don't forget that one of your most delightful membership benefits is a chance to visit other botanical gardens and arboreta throughout the country. If you're planning your spring and summer travel itineraries, be sure to include:

- Massachusetts Horticultural Society, Boston
- Blithewold Gardens and Arboretum, Rhode Island
- Hershey Gardens, Pennsylvania
- Chicago Botanic Garden, Chicago
- Dallas Arboretum and Botanical Society, Dallas
- Morris Arboretum, Philadelphia
- New York Botanical Garden, New York City
- The Royal Botanical Garden, Ontario, Canada
- Botanica, The Wichita Gardens, Wichita

At all of these fine gardens and arboreta, you will be given free admission and receive special treatment as a member of the Garden. Likewise, we will welcome members from all these institutions to St. Louis as our guests!

GIFT MEMBERSHIP ORDER FORM—*Please mail at least three weeks prior to occasion:*

☐ *Father's Day* ☐ *Birthday* ☐ *Other* ______________________

Gift To:

NAME ______________________

ADDRESS ______________________

CITY ____________ STATE ________ ZIP ________

TELEPHONE ______________________

Sign gift card: ______________________

Date Needed By: ______________________

Regular Membership $35. Contributing Membership $75.

For more information call 577-5118.

Gift From:

NAME ______________________

ADDRESS ______________________

CITY ____________ STATE ________ ZIP ________

TELEPHONE ______________________

☐ Enclosed is my check for $ ______________

☐ Please charge: VISA No. ______________

MasterCard No. ______________

Name as it appears on card: ______________

Expiration date: ______________

Please make checks payable to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

Second St. Louis Garden Tour

SUNDAY, JUNE 12, 1988

It's back by popular demand . . . a reprise of the glorious 1986 St. Louis Garden Tour. Once again the Members' Board has arranged a wonderful day for Garden members only, a tour of some of the most beautiful private gardens in St. Louis.

This year's selection of gardens ranges from the estate grounds of a southern-style mansion to a marvelous contemporary home by Bill Bernoudy, featuring annuals, perennials and a very special vegetable garden. Members will see a wide variety of edging treatments, decks, patios, pools, gates and fences.

One garden has an unusual and dramatic design including waterfalls, fountains, and a lovely shaded area planted with ferns and hostas. Another home overlooks the fairways of a golf course, creating a vista encompassing a lake and patio and planted with lilies, azaleas, rhododendrons, hostas and more than 90 flats of annuals.

Rose lovers will delight in a charming rose garden in a spectacular pool setting with ornamental brickwork and beautiful old trees.

The St. Louis Garden Tour is a wonderful way to spend the day with friends or family. Whether or not you attended the 1986 tour, you won't want to miss this opportunity to see a new collection of gardens, and gather inspiration for your own landscaping.

Watch your mail for more details and registration information for this Members-only event. Participation will be limited.

Reid Leads Neighborhood Involvement

Donnell Reid, recently elected to the Members' Board, is directing an innovative program designed to promote beautification, safety, education, development and cooperation in the Shaw, Tower Grove East and Fox Park neighborhoods surrounding the Garden. Mr. Reid is vice president of community development for Mercantile Bank. The program was initiated two years ago by the Bank's leaders, with the support and cooperation of neighborhood volunteers and organizations, including the Garden.

With the help of strong resident support, the program anticipates great success in preserving the beauty and character of these historic, south city neighborhoods. Garden director Peter Raven and membership marketing coordinator Dana Hines also serve on the committee.

FROM THE GARDEN GUIDES **New Weekend Tours**

Eight new volunteers from the St. Louis business community are completing training for a new series of tours planned for weekends or early evening hours. These tours are specifically designed for people who are unable to visit the Garden during weekdays.

The new Guides are: Jeannie Broaders, John Demmitt and Linda Ramsey (McDonnell Douglas Corporation); Eileen Hahn (Watterson Business College); Robert Martin (Health Careers Magnet High School); Nancy Miner (Data Research Associates); Sara Johnson (United Van Lines); and Larry Ryan (Farm Credit Administration).

Volunteer coordinators are Kathy Lupo and Maurita Stueck, and the staff coordinator is Stephanie Finke.

"Thousands of visitors tour the Garden every weekend from early March through October, and these volunteers are a wonderful asset to our Guide program," said Garden director Peter Raven.

Volunteer Teachers Needed for Workshops

The Education Division has a wonderful opportunity for volunteers to lead horticulture, ecology and other Garden workshops for children in pre-school through eighth grade. There will be a one-day-per-week training period for six weeks beginning in August. The workshops will meet on weekdays, one day per week during the school year. If you are interested, you are invited to attend a class in session to see what fun it is. For more information call the Education Division at 577-5140.

In the March/April *Bulletin*, page 14, Mrs. Walter D. Schmitz was incorrectly listed as Mrs. Walter D. Schnitz. We regret the error.—*Editor.*

NEWS FROM SHAW ARBORETUM

"Lewis and Clark" Summer Program

Tipis along the river, venison roasting over an open fire, camp residents busily involved in the activities of the day: making rope, flintknapping, pounding jerky and collecting wild edibles. Does it sound like a page out of the journals of Lewis and Clark? Actually, it was just a typical scene last summer at the Shaw Arboretum during a four-day residential program entitled "The Lewis and Clark Expedition."

During this exciting experience the students filled their days learning many of the skills that Lewis and Clark used to survive. These included learning about Native American crafts and lore, learning sign language and animal tracking, and practicing fishing with seines and fire-building.

Another significant accomplishment of the Lewis and Clark expedition was the collection of scientific data. To experience this aspect of their journey, the students travelled the woods using maps and compasses, pressing plants, making weather observations and exploring streams and caves.

One afternoon, two St. Louis County park rangers dressed as mountain men visited the camp. They spent the afternoon sharing exciting stories about the lives of mountain men and the hardships they faced, and teaching camp residents some of the skills they had acquired.

The nights brought a welcome coolness and a magical light show of flickering fireflies in the trees. Songs and stories around the campfire and nighthikes to explore the night world were fitting ends to busy days. On the last evening, camp residents shared a venison roast dinner with some Native Americans who came to display their crafts, share folk tales and even teach the group some simple dances.

The "Lewis and Clark Expedition," offered through the Henry Shaw Academy, will be held again this June for Academy members. Two sessions will take place. Children ages 10 to 13 can attend from June 21 to 24; children ages 14 to 16 are scheduled from June 28 to July 1. For further information call 577-5135, or refer to the *Summer 1988 Courses & Programs* brochure which was recently mailed to Members. *—Lydia Toth, Instructional Coordinator, Shaw Arboretum*

Prairie Plants for Your Garden

Prairie plants grown at Shaw Arboretum will be on sale at the Visitor Center beginning May 15. Twenty species of wildflowers and four species of grasses will be available for gardeners who would like to try some native plants or start a small prairie garden. These colorful and interesting plants are hardy, drought resistant perennials and like full sun.

From the Garden Gate Shop

A Celebration of Scent

In honor of the Fragrance Festival (May 1-8), the Garden Gate Gift Shop has available a Commemorative Perfume Bottle. This "Scents of Time" bottle features a frosted, Lalique-inspired design recreated from the original 1920's mold from France. It will be offered at a very special price of $25. A new, exclusive Fragrance Festival Potpourri is also available with a variety of jars and containers. During the Festival stop by for seeds and plants for your own fragrant garden.

Mother's Day Is May 8

The Garden Gate Shop is brimming with spring flowers and gifts for that special person. Miniature roses will be available and, as always, the finest in gardening accessories. Notecards featuring lovely watercolors of Tower Grove House are also for sale at the Shop... a perfect Mother's Day gift.

New Porcelain Flowers

The Shop now offers the Edward Marshall Boehm individual porcelain roses and orchids for sale.

Book Review *PICNICS, by Marilyn Meyers*

Whether you're planning tailgate parties, romantic dinners for two or a family outing, *Picnics* (Running Press, $19.95) shows you outdoor dining at its best. This lavishly illustrated cookbook includes menu suggestions, storage and transportation tips as well as more than 50 recipes for unusual dishes especially suited for picnics. If potato salad is getting boring, try sweet potato salad with pineapple and raisins. Fried chicken is a picnic staple, but for a new twist try almond fried chicken. Any picnic can be memorable and innovative with the ideas you'll receive from author Marilyn Meyers.

Other cookbooks in the Garden Gate Shop dealing with outdoor meals include *Barbeque'n With Bobby* (Ten Speed Press, $16.95) and *Outdoor Pleasures* (Stewart, Labori & Chang, $29.95). Come see our large selection of cookbooks.

LOVE FOUNDATION GIVES TO LIBRARY

For the tenth year, the John Allan Love Foundation has made a generous year-end gift to the Garden. In 1987, as in the previous year, the funds are earmarked for *Banks' Florilegium*.

Popularly known as "Captain Cook prints," *Banks' Florilegium* is a series of engravings made from copper plates. These magnificent engravings depict plants discovered on Captain Cook's first voyage around the world. Begun in 1768 and completed in 1771, the voyage discovered plants on the islands of the Pacific, in New Zealand, and in eastern Australia that had never before been studied by Europeans. *Banks' Florilegium*, issued in 34 parts and 738 engravings, is an important scientific record of the historic voyage as well as an outstanding example of the art of 18th century print-making.

Through the generosity of the John Allan Love Foundation and other donors, the Garden's library has been able to collect the 24 parts issued thus far. Last year the Love Foundation enabled the Garden to purchase all of the engravings of part XIII. Through this year's gift, the Garden has now purchased part XIV. As they are published through 1990, the Garden expects to acquire the full set of 34 parts.

The Garden extends thanks to the Love Foundation as well as to other individuals and groups who are enabling these important purchases. Such acquisitions contribute to the Garden's value as a center for research in systematic botany and the history of science as it relates to botany. Because it is able, through the generosity of its donors, to acquire rare books in botany and related areas, the Garden's library is widely considered one of the best of its type in the world.

Tree Diversity in the Amazon

Garden scientist Dr. Alwyn H. Gentry recently published an important article discussing the significant discovery that the world's richest known diversity of tree species exists in the everwet forest of the upper Amazon region in Peru. Botanists previously believed that Southeast Asian rain forests were the most diverse.

Dr. Gentry's article suggests that the Peruvian region may have the most diverse populations of reptiles, amphibians, birds, butterflies and mammals in the world as well. Gentry says, "special focus on preserving remnants of these rapidly disappearing ecosystems is of the utmost conservational importance."

Dr. Gentry is director of the "Flora of Peru," an ongoing project currently funded by the Mellon Foundation. It is a collaborative effort of the Garden, the Field Museum in Chicago, Universidad de San Marcos and Universidad Nacional de la Amazonia Peruana. Gentry's article was published in the *Proceedings of the National Academy of Sciences*.

Flora of North America Awarded Grant

The David and Lucile Packard Foundation recently awarded the Flora of North America (FNA) project a $20,000 grant to gather information on literature relating to North American plants and on plant distribution.

Located in Los Altos, California, the Packard Foundation was founded in 1964 and assists community institutions in a number of areas including conservation.

The FNA program is designed to study and describe all the kinds of plants that occur without cultivation in North America north of Mexico. Twelve volumes of books containing brief descriptions, distributions, illustrations, and identification keys will be published during the next 12 years, and all of this information will be contained in a computerized data base as well. For the first time in history, the information about all North American plants will be synthesized in one publication series.

Missouri Botanical Garden houses the operational center and editors working on the project are located at their home institutions throughout the United States and Canada. Nancy Morin is serving as the convening editor of the project. Initial stages of the program have been funded by participating institutions and the Pew Charitable Trusts.

IN MEMORIAM

Katherine Henby Hedley

1905-1988

Members, staff and friends of the Garden were saddened by the death of Mrs. William J. Hedley on January 18. Mrs. Hedley had been associated with the Garden through her 35 years of distinguished service with the National Council of State Garden Clubs (NCSGC).

In 1954 Mrs. Hedley was instrumental in arranging the move of the Council's headquarters from New York City to its current site at the south end of the Garden. Mrs. Hedley served as president of the Women's Association of the Garden in 1957-59, and in 1962 she was awarded the Order of the Golden Climatron by the Garden trustees, "In grateful recognition of extraordinary service to Missouri Botanical Garden." She was president of the NCSGC in 1977-79. Active internationally for many years, she was named to the newly created position of Ambassador-at-Large in May 1987.

The Hedley Wildflower Garden, located at NCSGC headquarters, was dedicated on October 2, 1987 to recognize and honor the service of Mrs. Hedley and her husband William. The garden was designed by the late Alan Godlewski, director of horticulture at the Garden (see page 3).

Mrs. Hedley's leadership, dedication and courage will be deeply missed.

For Younger Members

Adapting to the Climate

Everyone knows that plants cannot walk. You never see a tree walking down the street or meet a daisy out for an evening stroll, and no one has ever reported a runaway begonia. No, plants don't walk. They don't even have legs. Instead, they have roots that keep them safe and snug in the ground.

Staying in one place all the time can be very difficult. Imagine you are a plant. Your roots are deep in the soil and there you must stand day after day. This is fine if you are in the sunny tropics, but what if you lived on a cold mountainside? You couldn't walk inside if it was too cold. What if you lived in a hot desert? You couldn't walk to a water hole.

In order to survive in various climates, plants have had to adapt. Plant adaptations are changes plants make in order to stay alive and reproduce. For millions of years, plants have been changing or adapting to temperatures, weather, water and light.

Let's look at the different places plants live and the adaptations they have made.

Dry Climate

A desert is a very dry climate. Usually deserts have very little rainfall and very few sources of water. What kinds of adaptations would a plant need to live here? If you guessed water conservation, you are right. Think about a typical desert plant, the barrel cactus. The barrel cactus has pleats like an accordion. This allows it to expand and contract. When it rains, the barrel cactus will stretch out its pleats to help store all its water. As the cactus uses the water supply, the pleats will fold together. The pleats on the cactus also help give it shade from the sun. The spines on the cactus are actually modified leaves. The spines are small and allow less moisture to be lost from the plant than leaves, while protecting it from thirsty animals.

Wet Climate

Cacti have been very successful in adapting to a dry environment, while plants in the Amazon have adapted to a wet environment. The Amazon Victoria water lily has a rootstock that is embedded in the mud of a river or shallow lake. In order to capture sunlight to carry on photosynthesis, the water lily has developed enormous leaves. Throughout the leaf is a large network of veins that help support the leaf in the water. You can see samples of the water lily in the Garden's water lily pools during the summer.

Warm/Cold Climate

Plants have also adapted to climates that are warm in the summer and cold in the winter. The sugar maple is a good example. This tree produces broad leaves in the spring when the days become longer. The leaves make good use of all the summer sunshine and produce food that is stored in the tree's roots. When winter arrives, the tree loses its leaves and lives on the stored food. As spring approaches, the sap in the roots flows out to the branches to produce the new leaves. The sap is used to make maple syrup. This whole process is an adaptation to climate.

For more information you can read these books:

Edin, Herbert. *Atlas of Plant Life*, John Day Co.

Fisher, Aileen. *Mysteries in the Garden*, Bowmor.

Lambert, David. *Vegetation*, Book Wright Press.

Pringle, Laurence. *Being a Plant*, Thomas Y. Crowell Co.

PROJECT / *Design Your Own Plant Adaptations*

You will need:

Color crayons
Drawing paper

What to do:

Select one of the following environments (or make up you own) and create a plant that will survive there. Imagine what the plant will need. Will it need special parts to collect water? Or special seeds?

Environments:

- A stream bank
- An arctic mountain top
- A cold desert
- A dark forest floor
- A different planet

Pitzman Nature Program Supports Education

A child's mind is full of curiosity, imagination and questions. The Pitzman Nature Program at the Missouri Botanical Garden helps answer children's questions about the natural world. Established 31 years ago as a youth education project, the program concentrates on science concepts, natural history and ecology. Children are given the opportunity to investigate the world and gain a better understanding of their place in it.

The Pitzman Nature Program sponsors classes in conjunction with the Henry Shaw Academy and Garden youth education at both the Garden and Arboretum. Over the years the programs have focused on such topics as solar energy, natural awareness, microscope study and Ozark pioneers. As the Pitzman Nature Program has continued, it has grown larger in scope and focus. In 1978, eight classes were offered including a four-day river trip on the Meramec. This summer the Pitzman program again will offer the popular Lewis and Clark river exploration (see page 18) and 31 other classes. Topics will range from "Spectacular Spiders" to "Land of the Cactus."

In 31 years, the Pitzman Nature Program has given thousands of children a greater understanding of nature and their role and responsibility in its preservation. Answer your child's questions about nature by enrolling him in the summer Pitzman Nature Program at the Missouri Botanical Garden.

Trustee Profiles *Three New Trustees*

Gerald D. Blatherwick

Stephen F. Brauer

Three new trustees were elected at the annual meeting of the Garden's board on January 20, 1988.

Gerald D. Blatherwick, vice chairman of human resources and corporate communications for Southwestern Bell Corporation, was elected to a term. Mr. Blatherwick came to St. Louis from San Francisco in 1982; he has been with the Bell System since 1963. Active in community affairs, Mr. Blatherwick is a director of the Saint Louis Symphony, the Arthur W. Page Society, the National Action Council for Minorities in Engineering, and the American Council for the Arts; he serves as president of the Southwestern Bell Foundation and Chairman of Dance St. Louis. He and his wife Anne have two children. Mr. Blatherwick said, "It's exciting to be associated with the other trustees; they're a very dynamic group of people. I'm pleased to be working with such a great organization as the Garden."

Stephen F. Brauer, also elected to a term, has been president of Hunter Engineering Company in Bridgeton since 1980. Mr. Brauer is a trustee of the St. Louis Art Museum and St. Louis Country Day School, and is a board member of the St. Louis Area Council of Boy Scouts of America. He also serves on the National Council of Washington University School of Engineering. Mr. Brauer is a member of the Garden's Individual Gifts Committee, one of four committees responsible for assisting the $16 million capital campaign effort currently underway. Mrs. Brauer (Kimmy) serves on the Garden Members' Board.

Joseph F. Ruwitch Sr.

Joseph F. Ruwitch Sr. was elected as an emeritus trustee. Mr. Ruwitch recently retired as president of Renard Linoleum & Rug Company. He is currently a life member (and former president) of the board of The Jewish Hospital of St. Louis, a director (and former president) of the Jewish Federation of St. Louis, an honorary director of the Municipal Theater Association, and a board member of the United Way of Greater St. Louis. He has served as a director of the St. Louis Symphony Society, St. Louis Children's Hospital, and Washington University Medical Center. A former trustee of John Burroughs School and of St. Louis University, Mr. Ruwitch has lived in St. Louis with his wife Elizabeth since 1940.

Tributes

JAN.-FEB. 1988

In Honor Of:

Sibel Akyol
Mark Edison
Mr. and Mrs. Herbert M. Talcoff
Mrs. Anna Mae Ballard
Mrs. Dwight W. Coultas
Monica Columbo Barker
Mrs. F. Carl Schumacher, Jr.
Lisa Anne Baudendistel
Mr. and Mrs. Sanford Spitzer
Mr. and Mrs. Milton Canis
Mr. Doug Pawloski
Mrs. Diana Tischler
Dr. and Mrs. Richard Carlin
Mrs. Betty R. Longstreet
Mr. and Mrs. Richard Clement
Dr. and Mrs. Richard Wunderlich
Mrs. Mabel Ditmeyer
Mr. and Mrs. Peter Hochschild
Roberta Ross Eddy
William Lowell Eddy
Will C. Eddy
Caroline Eddy Jacob
Morris Jacob
Mr. John Fuller
Frontenac Garden Club
Miss Laura Gardner
Mr. and Mrs. John G. Goessling
Gatesworth Manor Residents
Paula Kipnis
Miss Angela Gayle
Mr. Rick Halpern
Mr. Alan Godlewski
Mississippi Valley Nurserymen's Cooperative
Mr. Sam Greenblatt
Mr. and Mrs. Harold N. Kravin
Mr. Lionel Kalish, Jr.
Mr. and Mrs. Leon M. Bodenheimer, Jr.
Kirkwood Garden Club #5
Paula Kipnis
Mr. and Mrs. Kurt Koerner
Mr. and Mrs. M. J. Grzesiowski
Sandra LaRose
Mr. and Mrs. Harold N. Kravin
Mr. Joseph Lefton
Mr. and Mrs. Richard Shaikewitz
Mrs. Hazel Loewenwarter
Mr. and Mrs. Wilton Agatstein
Mrs. Harold Baer
Mrs. Jean S. Bloch
Mr. and Mrs. L. Franklyn Lowenstein
Mr. and Mrs. Morris W. Persky
Mr. and Mrs. Donald F. Roth

continued on next page

Tributes

continued

Dr. George Mahe
Mr. and Mrs. Charles J. Cook

Mr. and Mrs. William Marre
Mr. and Mrs. Edwin F. Guth, Jr.

Miss Suzanne O. Mecker
Mr. and Mrs. G. Goessling
Mrs. Carroll F. McMahon

Charles Mintz
Mr. and Mrs. James M. Henderson

Missouri Botanical Garden Education Department
Paula Kipnis

Mrs. Paul F. Ring
Dr. and Mrs. Leigh L. Gerdine

Ruth Rockmore
Myrtle G. Weinrobe

Mr. and Mrs. Walter Salsman
Mr. Melroy Hutnick

Emma W. Schield
The Withers-Kalish Family

Mr. Robert Brookings Smith
Dr. and Mrs. Carlton M. Akins
Mr. and Mrs. Harvard K. Hecker
Dr. and Mrs. Peter H. Raven

Mr. and Mrs. Luther Taylor
Mrs. Marvin Harris

Mr. and Mrs. William Trail
Mr. and Mrs. Harvey Stone

Mr. and Mrs. Stephen A. Williams
Mrs. Alice Beffa Erdelen

Mrs. Denver Wright
Miss Rosemary Woodworth

Gifts in honor of Robert Brookings Smith in the last issue of the Bulletin *were incorrectly listed under Memorials. We regret the error.*

In Memory Of:

Mary Jean Ausbeck
Mr. and Mrs. Harry Bohnett
Mr. and Mrs. Donald Manion
Mr. and Mrs. Martin Marecek
Dr. and Mrs. A. C. Trueblood, Jr.
Mr. and Mrs. Herschel Woltzen
Mr. and Mrs. David Wrisley

Mr. F. Bert Baer
Mr. and Mrs. Phillip Schreiber

Mr. Alexander Bakewell
Mrs. Julia M. Lamy

Harriet Rodes Bakewell
Mrs. William Bixby, Jr.
Joyce K. Driemeyer
Mr. and Mrs. Raymond Faupel
Garden Club of St. Louis
Mr. and Mrs. George K. Hoblitzelle
Mrs. James Lee Johnson
Ladue Garden Club
Mrs. Julie M. Lamy
Mr. and Mrs. Theodore R. P. Martin
Mr. and Mrs. Charles Read
Mr. and Mrs. Cornelius F. P. Stueck
Betty and Eldon Turnbull
Mr. and Mrs. Charles White

Mrs. Sletha Ball
Miss Ruth E. Buerke

Bernard Barken's Mother
Mr. and Mrs. Lester R. Adelson

Viola Barta
Leo, Kathy and Sarah Schwartz

Mrs. Velta Bay
Sondra L. Larson

Dr. John Bergmann
Rev. Jane E. Rand
Mr. and Mrs. Herb Schettler

Mrs. Lucy Butler Bixby
Mrs. John Valle Janes, Sr.

Mr. Harry Blagbrough
Mr. and Mrs. Blair G. Balk

Mr. Earl A. Blankenmeister
Mr. and Mrs. Leonard R. Kantor

Hazel Boniface
Ethel and Marian Herr

Mrs. R. H. Brock
Delmar Garden Club

Mr. William Brown
Adrian N. Baker & Company

Mr. Herman W. Brune
Concord Extension Club

Mr. George H. Buchanan, Jr.
Mr. and Mrs. Jon R. Greene and Family

Mr. William R. Cady, Jr.
Mr. and Mrs. Patrick M. Donelan
Mr. and Mrs. Henry W. Dubinsky
Mr. and Mrs. Tom S. Eakin, Jr.
The Boatmen's National Bank-Officers and Directors
Mrs. J. Richardson Usher
Mr. and Mrs. Bruce R. Yoder

Mr. Paul W. Canavan
Ms. Olga Frentrop
Monsanto Photography Club
Mr. Hugo F. Schueren

Glennon Childress
Friends at Southwestern Bell Publications

Mr. Sam Childress
Rose Society of Greater St. Louis

Mrs. Lillian Agress Cogan
Mr. and Mrs. J. Richardson Usher

Mrs. Elizabeth Darst Costello
Finn Family

Mr. Sylvester Cowie
Mr. and Mrs. Paul J. Shaver

Mr. Joseph M. Cross, Jr.
Yuppie Landscaping Corporation

John, Kathleen, Meghan Dees
Mr. and Mrs. Richard Shaikewitz

Mrs. Rosemary Delaney
Mr. and Mrs. Frank Cognata

Mrs. Harlan Depew
Mr. and Mrs. William T. Molin

Mr. Joseph Dickerson
Mrs. Gloria Shapard

Mr. Frank Dohrmann
Mr. and Mrs. Paul Dohrmann
Mrs. Ruth Frohlichstein
Emily G. Huber
Mr. and Mrs. Bob McAdams
Mr. James McAdams
Mr. and Mrs. Jim Murvai
Ms. Cynthia Quetsch
Mrs. Pat Quetsch and Family
Mrs. Carol C. Stubblefield
Rev. and Mrs. Eddie Triplett

Mr. Earl Dooley
Mrs. Gene E. Fish

Edith B. Dorr
Janet K. Powell

Ann Maureen Dmytryk
Mrs. Robert A. Humber
Mr. and Mrs. H. Parker Smith

Mr. Robert O. Dugger
Mr. and Mrs. Francis R. Curley

Mr. James D. Edgar
Mr. and Mrs. Lawrence A. Furrer
Mr. and Mrs. James Merello
Ron Young Family

Frederick H. Eickhoff
Miss Joan Brucker
Miss Mary Brucker
Mrs. Daniel Dohm
Mr. and Mrs. Frank Greening
Mr. and Mrs. Gene Greening
Mr. and Mrs. H. H. Hope
Ms. Nancy Hope
Avis H. Minor
Mrs. Daniel P. Narzinski
Mr. James A. Neustaedter
Dorothy J. Reef
Mr. and Mrs. Edwin L. Swallow

Mr. Arthur Elsperman
Mr. and Mrs. Henry W. Dubinsky
Mr. and Mrs. Charles W. Oertli

Sister Mariem Feldman
Mr. and Mrs. Milton J. Canis

Mr. Colman Fenwick
Mr. and Mrs. Sam Antinora
Mr. and Mrs. Don Ellis
Mr. and Mrs. Frank Horvath
Mr. and Mrs. Jack Jenicek
Virginia Murray
Mr. and Mrs. Ken Schmidt

Mr. Son Fesler
St. Louis Horticultural Society

Dr. Timothy A. Fitzpatrick
Mrs. Wachter Butterworth

John Patrick Flanagan
Jane A. Bridges
Mary Bulger
Cathleen Estes
Mr. and Mrs. Phillip Gould
Mr. and Mrs. Gerald Grommet
Mr. and Mrs. David A. Hampton
Mr. Bill Heyde
Pat and Gayle Petrik
Reed School Association
Reed School Staff
Florence Roschke
Mr. and Mrs. Richard N. Schiff
Mildred Shipman
Mrs. Lloyd W. Toney
Mr. and Mrs. Herbert Weitman

Ricardo Forero
Mrs. Kathryn J. Hurlbert
Missouri Botanical Garden–Board of Trustees
Mrs. Jessica Ventimiglia

Mrs. Lucile V. Forsyth
Toshi and Sue Doi
Mr. and Mrs. Ben Wakasa
Mr. and Mrs. Joe Younger

Mr. Albert Fosha
Rose Society of Greater St. Louis

Mrs. Elizabeth Fowler
Mr. and Mrs. George F. Hellmuth

Mrs. Charles S. Fox
Mr. and Mrs. Rolla K. Wetzel

Mr. Dennis J. Gordick
Mr. and Mrs. Mark Aiazzi

Mrs. Frances M. Gore
Rose Society of Greater St. Louis

Ms. Susan Gottschalk
Mrs. Charles K. Hofling and Family

Mrs. Leda Grabow
Mr. and Mrs. William King, Jr.

Mr. David Gutman
Mrs. Sally Kushins

Mr. Ray F. Hamann
Rose Society of Greater St. Louis

Mrs. Paul Haudrich
Mr. and Mrs. C. U. Imboden

Mrs. John H. Hayward
Ms. Sima Alper
Mr. and Mrs. Joseph H. Bascom
Mrs. William A. Borders
Mr. and Mrs. John Brodhead, Jr.
Katherine W. Burg
Mrs. Fielding T. Childress
Mr. Charles E. Claggett
Mrs. John E. Curby
Dr. and Mrs. Harold M. Cutler
Mr. Sam'l C. Davis
Mrs. Dumont G. Dempsey
Mr. and Mrs. John M. Drescher, Jr.
Mr. Clark V. Graves
Dr. David Gustafson
Mrs. Richard D'Oyly Hughes
Mr. and Mrs. Harold T. Jolley, Jr.
Mr. and Mrs. W. Boardman Jones, Jr.
Katherine Kline
Mrs. John F. Krey II
Mr. and Mrs. Henry F. Langenberg
Mr. and Mrs. Oliver M. Langenberg
Mr. and Mrs. John K. Lilly
Mrs. Carl E. Lischer
Mrs. William M. Love
Mr. and Mrs. Neil F. Maune
Mr. Philip A. Maxeiner
Mrs. Frank Mayfield, Jr.
Mr. and Mrs. Lansden McCandless, Jr.
Mr. and Mrs. William B. McMillan, Jr.
Mr. and Mrs. Fred A. Nall
Mr. and Mrs. William R. Orthwein, Jr.
Mr. Roy Pfautch
Ms. Linda Rose
Ms. Lynn Rose
Mr. and Mrs. Hugh Scott, Jr.
Mr. and Mrs. Warren M. Shapleigh
Mr. and Mrs. H. Parker Smith
Mr. and Mrs. Robert Brookings Smith
Mr. and Mrs. Tom K. Smith, Jr.
Mr. and Mrs. Wallace H. Smith
Mrs. Rolla W. Streett
Mrs. L. Tichvinsky
Town & Country Drive Neighbors
Ms. Elizabeth K. Whittemore
Mrs. Polk Withers

Mrs. Katherine Hedley
Mr. and Mrs. Charles Austin
Mr. and Mrs. Edmund Blum
Dr. and Mrs. John Bockoven
Mr. and Mrs. William S. Cassilly
Mrs. Dwight W. Coultas
Mr. and Mrs. Charles S. Coyle
Fellow Co-Workers of Dr. Hedley
Mr. Arthur H. Fischer
Mrs. William R. Gentry, Jr.
Mr. and Mrs. R. A. Gooden
William H. Hedley Family
Mr. and Mrs. Peter H. Husch
Mr. and Mrs. Howard Ioas

Mr. and Mrs. Roy W. Jordan
Mrs. Edward G. Marsh
Mrs. Margaret Grigg Oberheide
Dr. and Mrs. Peter H. Raven
Mr. and Mrs. F. Carl Schumacher
Dr. and Mrs. Henry G. Schwartz
Mr. and Mrs. James A. Singer
Mr. and Mrs. Cornelius F. P. Stueck
Mr. and Mrs. Eugene C. Sunnen
Yolanda Wanek
Mr. and Mrs. C. J. Wilson

Mrs. Melanie Hefferan
Mrs. Clara LaVoise

Mr. John H. Hendren
Mrs. John C. Morfit

Mr. George Hereford
Mr. and Mrs. John G. Goessling

Mrs. Mildred H. Hermann
Mr. and Mrs. John E. Vigil

Mrs. Tseng Shou Hwang
Ms. Lynn K. Silence

Mr. Edmund H. Imholtz
Rose Society of Greater St. Louis

Mrs. Roy Johnson
Mr. and Mrs. George S. Goding

Sharon Jones' Father
Jen and Tim Phelan

Hulda Juerling
Ms. Olga Frentrop

William Kostedt, Jr.
Mrs. Edith B. Quick and Family

Mr. and Mrs. Charles Lamy
Mrs. John Valle Janes, Sr.

Mr. Irving Landy
Mr. and Mrs. Myron Glassberg

Mr. Manny Lazar
Mr. and Mrs. James M. Henderson

Mrs. John Leader
Mrs. Walter M. Jones

Mrs. Anne Chase Lionberger
Mr. and Mrs. John G. Goessling

Mrs. Lisetor
Mrs. K. F. Sherman

Mrs. Litwin
Dr. and Mrs. Ira C. Gall

Leonore Loeb
Paula and David Kipnis

Dr. Jack Mallen
Mr. and Mrs. Richard Halpern

Mrs. Dorothy Louise Marshall
Dorothy L. Marshall

Mrs. Carmella Massa
Mrs. Newell A. Baker

Mr. William A. McDonnell
Mrs. Jean-Jacques Carnal
Dr. & Mrs. James T. Chamness
Mrs. Leicester B. Faust
Mr. and Mrs. Henry H. Hitchcock

Mrs. Burnette W. McNamee
Yuppie Landscaping Corporation

Mr. Hugh McPheeters, Jr.
Mr. and Mrs. John M. Bacon
Mr. and Mrs. Joseph H. Bascom
Mr. and Mrs. Andrew N. Baur
Mr. and Mrs. Edward A. Boeschenstein
Mr. and Mrs. Allen M. Borucke
Mr. and Mrs. F. J. Cornwell, Jr.
Crossroads School
Mrs. Dumont G. Dempsey
Mr. Tom Diggs
Mr. and Mrs. Walter Diggs, Jr.
Mrs. D. W. Eades
Mr. and Mrs. Lucien R. Fouke, Jr.
Hon. Jean C. Hamilton
Mr. and Mrs. Fred Hanser
Robert M. Jones
Mr. and Mrs. Robert Kenny
Mr. and Mrs. Steven Korenblat
Mrs. H. A. LaBarr
Mr. and Mrs. John H. Lee
Mr. and Mrs. Don G. Lents
Mr. and Mrs. Arthur Lieber
Mr. and Mrs. Arthur Lieber, Jr.
Mr. and Mrs. James S. McDonnell III
Mr. and Mrs. John McPheeters
Mrs. Raoul Pantaleoni
Mr. and Mrs. Raymond W. Peters II
Mr. and Mrs. Richard B. Rosenthal
Tom Rosenthal
Dr. and Mrs. Ernest T. Rouse III
Mr. Erwin O. Switzer III
Mrs. Rita A. Switzer
Mr. and Mrs. Whitelaw T. Terry, Jr.
The Potpourri Syndicate

Mr. Roswell Messing, Jr.
Mr. and Mrs. Lester R. Adelson
Mr. and Mrs. Myron Glassberg

Mrs. Garret Meyer
Mrs. W. K. Bliss

Ms. Lexi T. Moore
Mr. John B. Henkle

Mrs. Ralph Morriss' Sister
Mrs. John C. Tobin, Jr.

Mr. Stephen Rollyn Moseson
Ms. Midge Weyerhaeuser

Jeanette Mueller
Southern Commercial Bank

Mrs. George E. Murray III
Mrs. Catherine Vanderpearl

Mr. Ray Newell
Mr. and Mrs. Robert E. Power

Barb Noce's Grandmother
Jen and Tim Phelan

Mrs. Jennie Pohn
Mr. and Mrs. Herbert M. Talcoff

Mrs. Anne Reinert
Mr. and Mrs. Daniel L. Schlafly

Mrs. Anne Reistino
Dr. and Mrs. William M. Fogarty, Jr.

Leola Renfro
Mr. and Mrs. S. Kingsley Royer

Mabel Hastings Rice
Sprig and Twig Garden Club

Mrs. Arlue Rieck
Mr. and Mrs. Gordon L. Ankney

Mrs. Mary O'Day Romer
Mr. and Mrs. James P. McFarlan

Mr. Irving Rosenfield
Yuppie Landscaping Corporation

Miss Virginia E. Rosenmeyer
Miss Josephine B. Farrington
St. Louis Horticultural Society

Mrs. Charlotte Kraft Scharff
Mr. and Mrs. Jeffrey H. Walton

Mr. Henry E. Schemmer
Mrs. Mildred Baer
Mr. Fred Rock

Mrs. Walter Scherzer
Webster Groves Garden Club, Group 15

Mr. Adam Schneider
Mr. and Mrs. Michael Harmon

Mrs. Elsie Schorr
Mr. and Mrs. Richard J. George

Mrs. Nancy Kretschmar Shaw
Mrs. Dwight W. Coultas
Mr. and Mrs. Rudyard K. Rapp
Mr. and Mrs. Clarence T. Wilson

Mr. Shemmer
Dr. and Mrs. Edward F. Berg

Mrs. Anne Smyser
Frederica B. Lincoln
Col. and Mrs. James B. Meanor, Jr.

Dr. Samuel Soule
Mrs. Samuel D. Soule

Miss Mildred Spiegelhalter
Miss Helen A. Mardorf

Grace M. Spiguzza
Mr. and Mrs. Joseph Pulitzer, Jr.

Mr. Edward Stone
Mr. and Mrs. Wilbert Obermoeller

Miss Lillian Stupp
Mr. and Mrs. Robert O. Nellums

Mrs. Genevieve Tinnerholm
Mrs. Jean-Jacques Carnal
Mr. and Mrs. William F. Reck, Jr.

Mr. Henry Uthe
Dr. and Mrs. Harry T. Duffy

Mrs. Lucille Weil
Mrs. Mildred W. Schaefer

Wayvo Weitzel
Joe, Maureen, Jeffrey, Derek Montaigne

Mrs. Grace Weston
Mr. and Mrs. R. L. McCormick, Jr.

Mr. Ralph E. White
Mr. and Mrs. Robert D. Rich

Mr. Harold Wiehage
James B. Eirten Family

Mrs. Herman Willer
Mr. and Mrs. Lester R. Adelson
Mr. and Mrs. Lester H. Husch

Mr. C. W. Wilson
Mr. and Mrs. Eugene F. Kern
Mrs. Shirley A. Kern

Mildred Anna Windle
Mr. and Mrs. William Serbi

Mrs. Carol Winkelmeyer
Grace Bleikamp
Ms. Virginia B. Carter
Mr. and Mrs. C. Michael Crider
Katie Doheny
Mr. and Mrs. Joe Harms II
Mr. and Mrs. Raymond C. Jaudes
Mr. and Mrs. John D. Lauer
Missouri Botanical Garden—Volunteer Instructors
Mr. Richard C. Snyder
Mr. and Mrs. Cornelius F. P. Stueck
Mrs. Paul H. Young, Jr.
Betty and Gene Zehr

Mrs. Zilla Wise
Mr. and Mrs. Richard Shaikewitz

Mrs. Marie Witscher's Mother
Dr. and Mrs. Gregory Storch

Mrs. Edith Wood
Mr. and Mrs. Arthur Hegedus

Mrs. Margaret Condie Woods
Mrs. John Valle Janes, Sr.

Mrs. Emma Young
Mr. and Mrs. Donald Bacon
Mr. and Mrs. James A. Young

Mr. Chas. Hunt Zeibig
Miss Hazel B. Duncan

Mrs. Clay Zienty
Mr. and Mrs. Ernest W. Mares

Board of Trustees

John H. Biggs
President

Joseph H. Bascom
Rev. Lawrence Biondi, S.J.
Gerald D. Blatherwick
Stephen F. Brauer
William H. T. Bush
Jules D. Campbell
William H. Danforth
Richard K. Gaines
Robert R. Hermann
Rt. Rev. William A. Jones, Jr.
David W. Kemper
Charles F. Knight
Robert E. Kresko
William E. Maritz
James S. McDonnell III
Lucius B. Morse III
Mrs. Fred A. Oberheide
William R. Orthwein, Jr.
Mrs. Vernon W. Piper
Mrs. Lucianna Gladney Ross
Dr. Howard A. Schneiderman
The Hon. Vincent C. Schoemehl, Jr.
Sydney M. Shoenberg, Jr.
C. C. Johnson Spink
Mrs. Walter G. Stern
John K. Wallace, Jr.
O. Sage Wightman III

EMERITUS TRUSTEES
Howard F. Baer
Clarence C. Barksdale
Sam'l C. Davis
Dr. Thomas S. Hall
Henry Hitchcock
Anne L. Lehmann
A. Timon Primm III
Joseph F. Ruwitch
Louis S. Sachs
Daniel L. Schlafly
Warren M. Shapleigh
Robert Brookings Smith
Tom K. Smith, Jr.
Harriet Spoehrer
Harry E. Wuertenbaecher, Jr.

MEMBERS' BOARD
Mrs. Henry W. Dubinsky
President

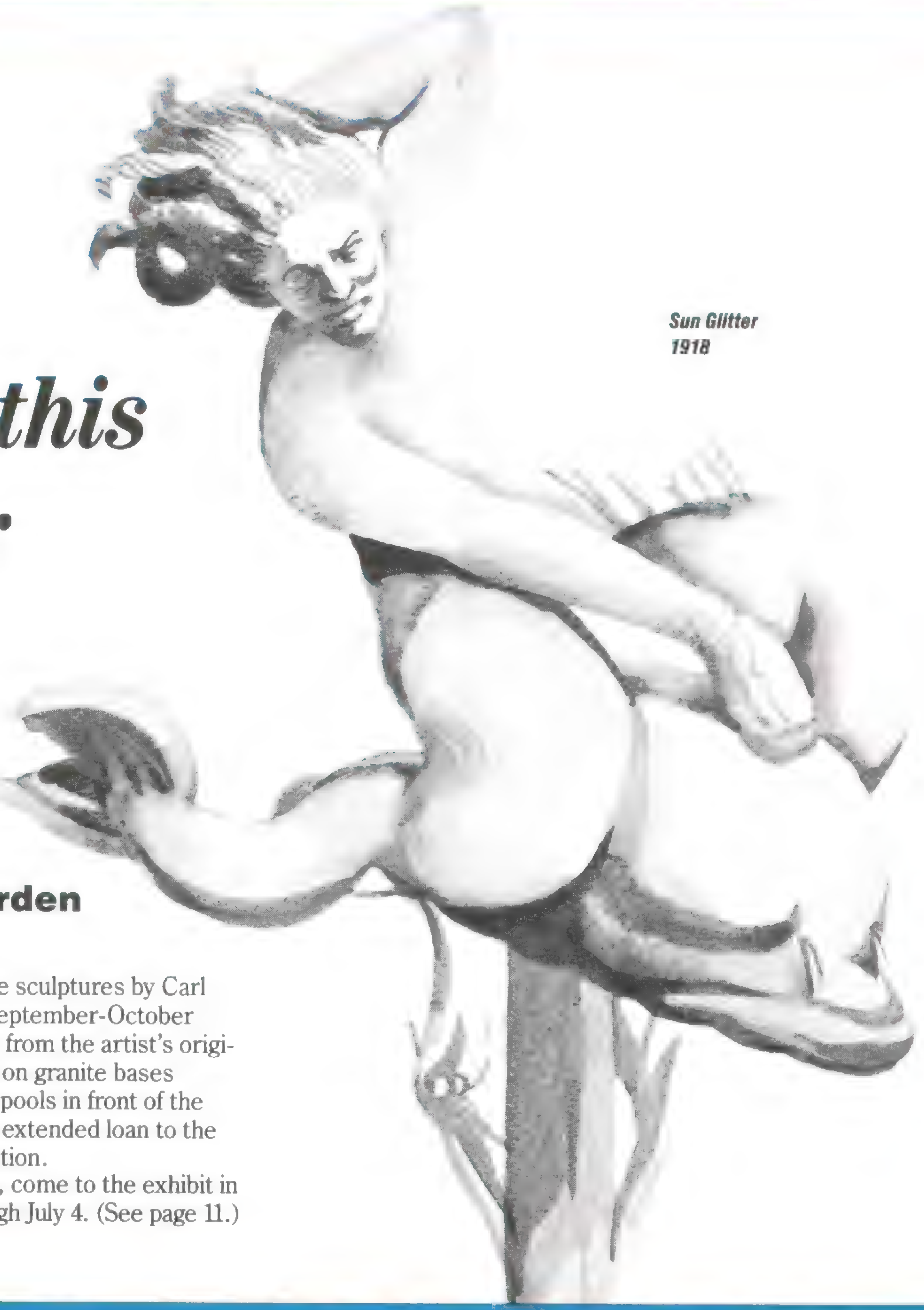
Mrs. Rudyard K. Rapp
First vice president

Ms. Elaine A. Alexander
Second vice president

Mrs. Robert P. Elsperman
Secretary

Frederick H. Atwood III
Treasurer

DIRECTOR
Peter H. Raven



Sun Glitter
1918

Coming this Summer

New Sculpture Garden To Be Installed

The seven monumental bronze sculptures by Carl Milles described in detail in the September-October *Bulletin* are being cast in Sweden from the artist's original models. They will be installed on granite bases placed in the newly renovated lily pools in front of the Climatron. The sculptures are on extended loan to the Garden from the Gateway Foundation.

For a preview of Milles's work, come to the exhibit in the Ridgway Center May 22 through July 4. (See page 11.)

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
P.O. Box 299
Saint Louis, Missouri 63166

SECOND CLASS
POSTAGE
PAID
AT ST. LOUIS, MO

Missouri Botanical Garden

Bulletin

JULY / AUGUST 1988

VOLUME LXXVI
NUMBER FOUR

Inside This Issue

4 **Gardening at the Garden**
At 12 years old, the English Woodland Garden is a glorious sight.

6 **Flora of North America**
A grant from the National Science Foundation sees the project off to a splendid start.

7 **National Council on the Arts**
Prestigious visitors are treated to a day at the Garden.

8 **Second St. Louis Garden Tour**
A fine time was had by all—and the gardens were looking their best.

10 **Calendar of Events**
Summertime is fun time at the Garden for the young and the young at heart.

12 **Ask the Answer Service**
At the height of the growing season there's still time to solve gardening problems.

13 **From the Membership Office**
Record membership and a successful Fragrance Festival.

14 **Henry Shaw Fund Committee Honored**
A salute to a very special group.

16 **Tributes**
Family and friends are honored with a gift to the Garden.

On the cover: Yatsuhashi bridge in the Japanese Garden is a cool place on a hot summer day.
—Photo by Richard Benkof

The BULLETIN (ISSN 0026-6507) is published bi-monthly by the Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, MO 63110. Second class postage paid at St. Louis, MO. Subscription price $12.00 per year. $15.00 foreign.

The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $35 per year, Members also are entitled to: free admission to the Garden. Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Susan Wooleyhan, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

A Spectacular Spring

The last several weeks have been a very special time at the Garden. Visitors responded enthusiastically to new events and activities in April and May. The Garden's membership reached a new level of 22,165 Members during this same time, demonstrating enthusiasm for the Garden's programs.

The Fragrance Festival set an attendance record during its eight days, and the Members' Board deserves recognition for its fine work in coordinating this event under the leadership of Trustee Nora Stern, a past president of the Board. It was the efforts of the entire Board, however, that made it possible to bring together thousands of details and arrangements for a spectacular week featuring special events including a floral arranging workshop and a benefit "Breakfast With Tiffany's." On behalf of the Board of Trustees, I wish to thank each Board Member for making this Festival an important part of spring at the Garden.

This spring truly was exceptional. In April, the Kresge Foundation, a prestigious private philanthropic institution in Michigan, awarded the Garden a $650,000 challenge grant to assist in the restoration of the Climatron. The challenge is to be used as leverage in raising the remaining support needed for the project. The Kresge award brought the total amount raised in the $16 million capital Campaign for the Garden to over $12 million.

To complete a nearly perfect season, in late May, the seven bronze sculptures by Carl Milles arrived in excellent condition after a long excursion from Sweden to St. Louis. Mounted on pedestals in the lily pools between the Climatron and Flora Gate, the sculptures represent the finest in garden sculpture. These pieces were placed at the Garden through the efforts of the Gateway Foundation of St. Louis.

The 13th Annual Japanese Festival, scheduled to open on August 27, promises Members and visitors another great opportunity to visit the Japanese Garden and learn more about Japanese culture.

It is difficult to imagine a more spectacular spring and summer and, again, I thank the Members' Board and the entire membership for their marvelous support.

Peter H. Raven

VOLUNTEERS HONORED: At a luncheon at the Ridgway Center on April 6, 1988 the Garden honored five volunteers who have served for 20 years or more. Pictured above (left to right): Jane Penhale, Boxwood Society, 30 years; Virginia McGinley, Guides, 20 years; Dr. Peter Raven, director; Edna Dependahl, Guides, 20 years; Shirley Durfee, Guides, 20 years; and Bea Perrin, volunteer instructor, 20 years.

UPDATE: As of May 31, 1988 the $16 million Campaign for the Garden has raised $12,258,840 in gifts and pledges. We thank those donors whose generosity has helped us reach this point in our fundraising progress.

Kresge Foundation Makes Major Award to Climatron

Work has begun on the Climatron renovation.

The Kresge Foundation recently awarded the Garden a $650,000 challenge grant, earmarked for the Climatron restoration now underway as part of the capital campaign.

Peter Raven noted, "The Kresge award has particular importance because it is directed toward the Climatron, the Garden's most popular feature and one of the reasons for our longstanding success as a public institution. The direct result of their assistance will be the Climatron's complete restoration, to keep it one of St. Louis' finest landmarks and a major aesthetic and educational facility. This will do much for the Garden, for the St. Louis community and for the state."

"This is wonderful, inspiring news," added Robert E. Kresko, the Trustee who serves as the campaign's Chairman. "We are just beginning the restoration of the Climatron. The Kresge challenge, which allows us to use their award as leverage in raising the remaining support needed for the project, will give the campaign an enormous boost in reaching out to the St. Louis community. We are very grateful for the grant and for the vote of confidence it implies."

The Garden was notified of the the award shortly before May 1, the beginning date of the restoration's first phase, the removal of the dome's worn plexiglas panels. The Kresge grant brought the capital campaign's funding total to more than $12.2 million. At just under $6.5 million, the Climatron restoration is the largest single component of the drive. To date, about $4.8 million has been raised for this project, including the Kresge award. The grant is intended for use in stimulating the additional $1.7 million in funding needed to complete the Climatron project. This remaining support must be raised by August 1989, as one of the conditions of the Kresge grant.

In mid-May, the first contribution directly responding to the challenge was received from the Hunter Engineering Company, which pledged $100,000 to the Climatron project. A mailing to the Garden's members was sent in early June asking their help in meeting the challenge. Based on previous experience with awards of this type and the popularity of the Climatron, the Campaign's steering committee and staff feel confident that the remaining funds will be raised.

The Kresge Foundation, of Troy, Michigan, is one of this country's most prestigious philanthropic institutions. It is an independent, private foundation created by the personal gifts of Sebastian S. Kresge. Grants are made to organizations for projects involving construction or renovation of facilities and the purchase of major capital equipment or real estate. Award recipients operate in the areas of higher education, health care, arts and humanities, social service, science and the environment, and public affairs.

In 1987, the Foundation reviewed 676 proposals. It made awards totaling $49,130,000 to 165 charitable organizations in 38 states and the District of Columbia. At the time of last April's grant announcements, the Foundation had awarded 69 grants in 1988 for a total of $24,995,000.

The Climatron challenge is by far the largest Kresge grant to be awarded the Garden, and brings the total of that Foundation's funding in the past decade to $1.25 million. The other two awards were $250,000 for the construction of the Ridgway Center visitors' facility (1978) and $350,000 for the renovation of the John S. Lehmann Building, the Garden's botanical research center (1985).

MISSOURI BOTANICAL
JUN 30 1988
GARDEN LIBRARY

SCULPTURE RELOCATED: Juno, queen of heaven, goddess of women and protector of marriage, has been moved to the lawn east of Tower Grove House. The four-ton marble statue was commissioned by Henry Shaw and arrived at the Garden in 1886. Since then she has stood in five other locations on the Garden grounds, most recently behind the Climatron. The sculpture was moved to her sixth and present location to make way for construction in the Climatron area.

Gardening at the Garden

The Woodland Garden

THEN AND NOW: Left frame shows John Elsley planting Woodland Garden in 1976. Right frame shows same view in 1988.

If you have wondered how long it takes new plantings to flourish, come see the Woodland Garden, which is sufficiently thrilling this year to inspire the article that follows. A Bicentennial project, the Woodland Garden was dedicated on May 4, 1976, following virtually clearing the two-acre site behind the Lehmann Building except for the canopy of selected trees. Twelve years later, the Woodland Garden looks very different.

It all started with former Curator of Hardy Plants, John Elsley, who brought the good idea of a woodland garden with him from England in 1973. Perhaps the heat of the local summer helped prompt him to seek out a wooded spot and establish a shady garden there. To paraphrase and condense some of Mr. Elsley's comments on his goals, the Woodland Garden displays attractively and informally a concentrated collection of botanical treasures from around the world under circumstances meant to simulate their natural habitats. *Collection* is a key word, for Mr. Elsley acknowledged that the Woodland Garden helped satisfy his collector's instincts. The high concentration of selections and the changing canopy set the stage for year-round attractions. Flowering is most robust in spring, but the floral display continues through summer and into autumn, and the progression of seasons offers additional incentives to visit: shade, foliage, ferns, and fall colors. Even winter has its beauty, since barks, berries, birds, and such late-winter flowers as winter aconite, snowdrops, and Ozark witch hazel await attention then.

The Woodland Garden owes much of its vitality to volunteers, unfortunately too many to list here. In fact, seven present volunteers have been donating their talents since the earliest days of the Woodland Garden. Last summer, volunteers Adrienne Biesterfeldt, Joyce Broughton and Sara Moore teamed up to update the computer records, maps and signs in the Woodland Garden, and they prepared a plant-finding guide for the area. A second document worthy of applause is Ingrid Lever's brochure on highlights of the Woodland Garden written in 1982.

Following the long and fertile tenure of horticulturist Mick Knobbe, Tad Dettmann took charge of the Woodland Garden in 1986 when Mick elected to tackle new challenges. At that time Tad had been at the Missouri Botanical Garden for roughly a year, having completed a degree in horticulture at Southeast Missouri State University in Cape Girardeau just before joining our staff. Tad's abilities and dedication are readily apparent to any Woodland Garden watcher, or to any eavesdropper, for it is easy to overhear comments on how fine the Woodland Garden is looking. Beyond keeping his tightly packed terrain looking sharp, Tad is expanding the Woodland Garden northward across the walkway into the area just east of the stream that flows into the Japanese Garden. When asked about special challenges, Tad replies that he enjoys seeking out and experimenting horticulturally with unusual plants, and his special interest is species native to Missouri. One benefit of this is that the Woodland Garden is becoming increasingly useful and enjoyable as a tool for learning our local wildflowers and ferns.

Tad cites the Solomon's seals (of the genus *Polygonatum* in the Lily Family) as fine examples of native plants thriving in the Woodland Garden while otherwise generally underused in horticulture. Altogether there are some 90 species of Solomon's seals distributed around the world, mostly in the North Temperate regions; one (or two according to some interpretations) species are wild in Missouri. The native species and several

SPLENDID AT TWELVE YEARS OLD

exotic Solomon's seals help beautify numerous spots in the Woodland Garden throughout most of the growing season. The plants arch gracefully with the tubular light yellow to light greenish flowers dangling beneath. The leaves sometimes hint subtly of blue, and in some horticultural selections can be variegated. The young shoots are said to be edible (no thanks), and American Indians pounded the underground stems (rhizomes) into flour. This organ holds the key to the English name—on the rhizome are signet-shaped scars legendarily similar to the seal of the wise King Solomon.

Warning. If you come see Solomon's seals, don't be fooled by false Solomon's seals (species of the genus *Smilacina*, or *Maianthemum* according to one classification, likewise in the Lily Family). False Solomon's seals differ from the real thing by having their flowers in clusters at the ends of the branches rather than dangling beneath. False Solomon's seals are abundant in the Woodland Garden, where their reddish berries add to the late-season color.

To turn from the well established to an experiment, in the new addition mentioned above, a scarlet, star-shaped flower may turn your head. This is royal catchfly (*Silene regia*, in the Carnation Family). The "catchfly" refers to a sticky area reminiscent of flypaper commonly found on stems of silenes. The species has dwindled along with its prairie habitat, yet it asserts itself stubbornly along old railroad lines and in old cemeteries that were once parts of prairies. It also occurs in habitats with prairielike aspects, such as glades, one such occurrence being in suburban St. Louis. The firecracker-red flowers share the attribute of hummingbird-pollination with other red-flowered or orange-flowered Woodland Garden species: cardinal flower, bee balm, trumpet honeysuckle, pinkroot and trumpet creeper.

One of the finest specimens in the Woodland Garden is the Alabama snow wreath (*Neviusia alabamensis*, a shrubby member of the Rose Family). The feathery white April flowers give the species its English name. The Latin name comes from a minor error by the North American botanist Asa Gray, who thought that a Reverend R. D. Nevius discovered the shrub; the truth was that a Professor W. S. Wymans made the discovery while alone near Tuscaloosa Alabama, that site now (literally) gone through the action of dynamite. Alabama Snow Wreath has disappeared from southern Missouri, but it survives as a rare species on rocky bluffs at about nine places in Alabama, Tennessee, Mississippi, and Arkansas. The species is hardy in cultivation far north of this region.

Completely eliminated from the wild but visible as a young specimen is the Franklin tree (*Franklinia alatamaha*, a shrub of the Camellia or Tea Family), which honors Benjamin Franklin nomenclaturally. It is known wild solely from one station in southeastern Georgia, and has not been recorded there since 1790. The Franklin tree survives only in cultivation.

For a novelty, find the horsetail (*Equisetum hyemale*, in the Horsetail Family), a nonflowering, spore-bearing remnant of a lineage that dates back roughly 400 million years to the Devonian Period and that hit its peak of diversity and stature (some representatives tree-sized) in the Coal Age, roughly 300 million years ago. By the time the flowering plants appeared on the fossil scene, approximately 125 million years ago, the horsetail assemblage was already far over the hill, so that the few species still with us represent just a hint of what once was. The plants have an almost eerie primitive look, with green, virtually leafless, hollow, segmented stems. The segments can break apart, float away, and resume growth where they settle. Their rough texture comes from gritty silica crystals to which the species owes its alternative name, scouring rush, which reflects historical contributions to cleanliness. At the tips of some stems you may find cone-like spore-producing organs. Look closely at the symmetry of their hexagonal subunits.

Alabama snow wreath

Picking a favorite tree is impossible, but one candidate might be the persimmons, with their black bark broken up into square blocks. Some folks savor their fruits, others find them disgusting. *Nobody* likes them when not 100 percent ripe. Basing your decision on the big grocery store persimmons won't do, as these are an Asian species with much larger and blander fruits than our *Diospyros virginiana*. The scrumptious fruits form on only half the trees, since most specimens are strictly male or female. Persimmons form clones, with the result that entire clumps can be fruit-bearing, or not. Ebony is an extremely hard wood, and what that has to do with persimmons is that the latter are closely related to ebony and likewise have wood so hard that it has served as heads on golf clubs. Or to supply a more personal example, the nails bend over when I attempt to fasten signs to the persimmon trees at the Garden.

From the coarse to the delicate, the large-scale floral splendor of the Woodland Garden is familiar enough to any visitor. If you have not yet been so fortunate to visit, the enticements include a cheerful rainbow of azaleas representing multiple hybrid groups and including the native species. Many of these were planted in honor of Mrs. Hubert J. Pruett, formerly a volunteer in Tower Grove House. With plenty of room for debate, I vote for first prize to the well-named *Rhododendron* 'Purple Splendor'. Also exuberant are the magnolias, including the irresistible oriental *Magnolia praecocissima* (better known as *M. kobus*), with its fragrant white flowers in early spring. During the height of the wildflower season a blue sea of Virginia bluebells (*Mertensia virginica*) stretches across the middle of the garden. At about the same time, the north end is awash in white, pinks and reds of assorted flowering dogwoods, including and derived from the native species *Cornus florida*. Then come the tall white wands of the bugbanes (*Cimicifuga*), orange trumpet creepers (look for ants feeding on nectar produced outside of the flower near its base), cool hostas, and an array of composites: coneflowers (*Echinacea*), tickseeds (*Coreopsis*), black-eyed susans (*Rudbeckia*), and more, and more. A book would be needed to tell the whole story, but you have read enough, time to come for your own look.

—George Rogers, Ph.D.

Flora of North America Awarded $225,900

THE National Science Foundation awarded a two year grant of $225,900 beginning in May 1988 to the Flora of North America project for preparation of the first volume and major parts of other early volumes. This grant provides the match required by the J. N. Pew, Jr., Charitable Trust for an award of $100,000 for administration of the project.

The Flora of North America (FNA) project will produce a multi-volume flora and a computerized database, both containing information on the vascular plants growing without cultivation in North America north of Mexico. The Missouri Botanical Garden is the organizational center for the project, which is under my direction as Convening Editor. Volume One will contain introductory chapters, and treatments of vascular cryptogams (ferns and fern allies) and gymnosperms.

Workshop The National Science Foundation grant also supported a workshop titled "Floristics for the 21st Century," which was attended by more than sixty representatives from basic and applied research fields. The workshop, held May 4-7 in Alexandria, Virginia, discussed current use and future plans for floristics and focused primarily on information about the vascular plants of North America north of Mexico.

I designed conceptual aspects of the workshop and was assisted by Kay Tomlinson, who recently joined the FNA office as project coordinator, and Patricia Rich, who designed the workshop activities. It was co-sponsored by the American Society of Plant Taxonomists and the Flora of North America (FNA) project and hosted by the American Institute of Biological Sciences. Marshall Crosby and Robert Magill, both from the Garden's division of Botanical Information Resources, also attended the workshop. Proceedings from this workshop will be published by the Garden in the fall of 1988.

The workshop was preceded by a two-day Flora of North America editorial committee meeting, the third meeting the group has held.

Day One The four-day workshop began with presentations on the organization of the Flora of North America project. Dr. Crosby demonstrated and discussed the Garden's computer system, TROPICOS. The computer will be an important tool in this project: for writing, editing, and producing the published volumes, for storing additional information received after the volumes are published, and perhaps most importantly for making the information available in ways never before possible. Talks given by editors of other major floras—Vernon Heywood for *Flora Europaea*, Alex George for *Flora of Australia*, and G. E. Gibbs-Russell for *Flora of Southern Africa*—gave workshop participants a glimpse of the hard work to come and many new ideas about the potential use of floristic work.

Particularly exciting were talks by Lorin Nevling and Warren Brigham, both of the Illinois Natural History Survey, which now uses computers to superimpose maps of animal and plant distributions with other kinds of maps, such as soil, precipitation, coal deposits, roads, or vegetation. The possibilities for using such technology in land use management, conservation, and biological research are truly astounding.

Day Two Workshop participants spent the second day in small working groups discussing how they use floristic information now, and how they might use a continental flora in basic or applied research. Even though floras are prime sources for information, they are not used as much as might be expected because they often are incomplete, inconsistent, or poorly documented. For this reason the Flora of North America will be a particularly valuable resource because it will present information consistently and completely with full documentation within each plant group.

Days Three and Four On the third day participants discussed plans and priorities for making the FNA project work while still incorporating as many of the ideas from the previous day as possible. Very useful suggestions were made during these discussions, and many of them will be used to modify or expand the FNA project's strategic plans. On the last day participants wrote reports on the workshop discussions and conclusions.

If this sounds like four days of very hard work, it was! But an amazing synergistic atmosphere developed in this meeting. A combination of elements made this workshop a deeply satisfying experience: excitement that Flora of North America was really going to happen and workshop participants were part of it at a critical time; having wonderful and far-reaching ideas and knowing that some of them were actually possible; and developing professional and personal friendships with colleagues in related fields in a way never before possible. *—Nancy Morin, Ph.D.*
Director, Missouri Botanical Garden Herbarium

BOTANY FIELD DAYS: Visitors to the research department's open house were intrigued by the many educational displays. Here, Renate Kheim, a plant mounter in the herbarium, demonstrates the variations in specimens from all over the world and compares the similar condition of specimens collected in 1800 and 1983.

Left to right: Frank Hodsoll, Chairman of the NEA; Talbot McCarthy, National Council on the Arts member (St. Louisan); John Biggs, President of Board of Trustees, Missouri Botanical Garden; Celeste Holm, actress and National Council on the Arts member; Lloyd Richards, noted Broadway producer/director, Dean of the Yale School of Drama and National Council on the Arts member; Nora Stern, Garden Trustee.

GARDEN HOSTS NATIONAL COUNCIL ON THE ARTS

"What a great occasion for the Garden and St. Louis!" That was the reaction of Board chairman John Biggs in his welcoming address to the prestigious National Council on the Arts. Council members visited the Garden for a May 7 tour and luncheon in their honor.

This year the Council picked St. Louis as the site for its 1988 spring meeting, held May 5-8. It was an unusual decision for the presidentially appointed group, which usually meets in Washington, D.C.

The Council serves as the advisory board of the National Endowment for the Arts (NEA). Through grants from the NEA, an independent agency of the federal government founded in 1965 to encourage the arts, museums like the Garden and other arts institutions receive federal support for a variety of cultural activities. NEA grants to the Garden helped with funding for the design of the Japanese Garden (Seiwa-En), the construction of the Ridgway Center, and the preservation of the Garden's celebrated rare book collection.

The NEA also channels federal funds to arts institutions through the nation's state arts councils. The Missouri Arts Council disburses state monies to the Garden and other Missouri institutions. But the MAC also receives and disburses federal funds from the NEA. Over the past 12 years, the Garden has received support from the Missouri Arts Council for many of its arts projects—not only garden design but also art exhibits in Monsanto Hall, performances of theater and dance in Shoenberg Auditorium, and musical performances by groups such as last year's San Francisco and Los Angeles Taiko drummers during the Japanese Festival.

That St. Louis was able to provide a meeting site for the National Council on the Arts was, as Missouri Arts Council chair Joanne Kohn puts it, a rare "opportunity for all of us to learn how the National Endowment for the Arts works." The Garden was pleased to be a part of this productive occasion.

The Garden, along with Kohn and other St. Louis agencies and institutions, welcomed the chance to learn more about the NEA. The Garden also welcomed the chance to show off St. Louis and its wealth of cultural opportunities to the NEA's National Council on the Arts.

Shaw Arboretum

Prairie Garden

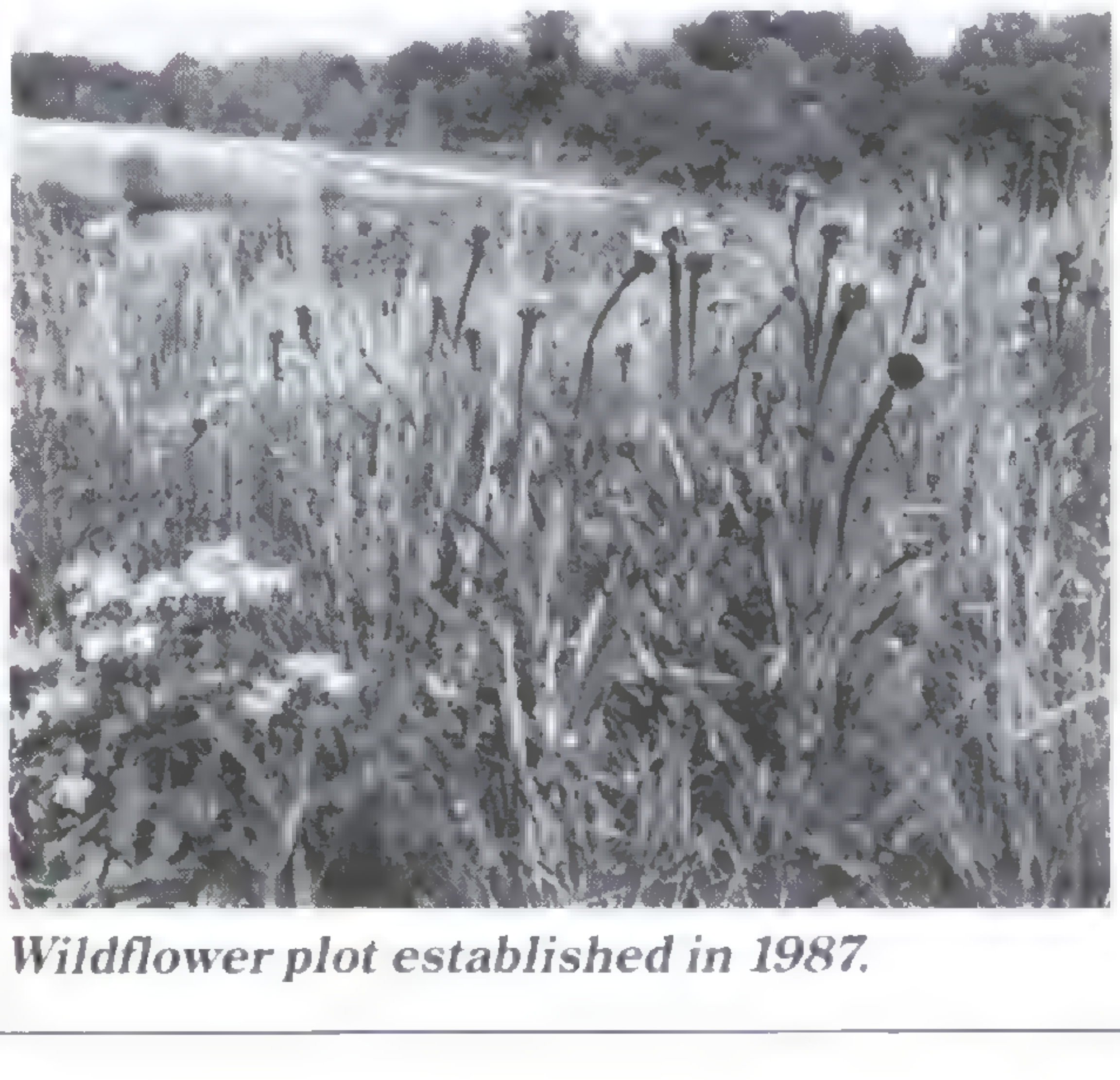
Native plants have many advantages for gardeners in the midwest, with its extremes of heat and cold and protracted droughts. The plants are adapted to our harsh climate and are usually resistant to the local insects and plant diseases.

Adaptation to drought is epitomized by the plants that grow in the tallgrass prairies. More than 300 species of plants grow in these prairies, which once covered half of the St. Louis area and a third of Missouri. The plants use water conservatively and have deep, massive root systems. Many of them are strikingly beautiful and make good additions to perennial gardens. Some adventurous gardeners are planting prairie gardens: miniature prairies containing many species of wildflowers interspersed among prairie grasses.

An excellent example of such a garden may be seen in the Experimental Prairie at Shaw Arboretum. Five thousand greenhouse-grown plants were transplanted to a plot in the prairie in 1987. Forty-two species of wildflowers and eight species of grass were used. Some early species have already bloomed, including golden alexanders and pale purple coneflowers. A succession of flowers will greet visitors from July through October, including black-eyed susans, blazing stars, goldenrods and asters. This plot is not yet mature and it will continue to flower for many years since most prairie plants are long-lived perennials.

This plot may be seen from the prairie trail near the grove of large trees in the northeast corner of the prairie. A sign will identify the plot and a narrow trail running through it will offer visitors a better view of these fascinating plants.

—William Davit, Shaw Arboretum



Wildflower plot established in 1987.

SHADE GARDEN

LAKE
GARDEN

JAPANESE GARDEN

PATIO
GARDEN

WOODLAND GARDEN

A Glorious Garden Tour

WHAT COULD BE BETTER than a lovely Sunday afternoon in June? For Garden members, Sunday, June 12, featured a tour of ten of the most beautiful private home gardens in St. Louis. The last such tour was held in 1986.

The ten gardens displayed a wide variety of splendid landscaping, from small walled areas to wide, sweeping lawns. The day-long tour was attended by more than 1,300 Members, including Dr. and Mrs. Thomas B. Hall, who came all the way from Shawne Mission, Kansas.

The day ended with a delightful Southern-style garden party at another magnificent home not include on the day's tour. The festivities were highlighted by a drawing for a trip to Hawaii courtesy of TWA and Westin Hotels, won by Mr. and Mrs. Shadrach Morri

CITY GARDEN

ANNUAL GARDEN

ENGLISH GARDEN

ARCHITECT'S GARDEN

SCULPTURE GARDEN

and Party

The garden tour and party were made possible by he dedicated chairmanship of Mrs. Walter F. Bal-inger III and Mrs. Stephen F. Bowen, Jr., the generosity of the garden owners, and the hard work f more than 200 volunteers. By all accounts the day vas a grand success, and the Garden extends its hanks to all who participated.

The 1988 Garden Tour Committee enjoying the Finale Party following a long and highly successful day. From left to right: James Schneithorst, Sue Oertli, Mary Randolph Ballinger, Ann Bowen and Ellen Dubinsky.

JULY

1 FRIDAY

Folklore & Legends: "Tales that Grew With America"

11 a.m. to 3 p.m., Ridgway Center and grounds. Continuous storytelling sessions for children, co-sponsored by the St. Louis Gateway Storytellers and the St. Louis Public Library. Free.

1-4 FRI.–MON.

Works by Carl Milles

9 a.m. to 8 p.m. daily, Ridgway Center. Display of sculptures and drawings by the noted Swedish sculptor. Free.

2 SATURDAY

Walking Tour

1 p.m. Meet at Ridgway Center ticket counter rain or shine for a tour of the grounds led by Garden Guides. Free.

3 SUNDAY

Walking Tour

2 p.m. Meet at Ridgway Center ticket counter rain or shine. Learn about the Garden with a tour led by Garden Guides. Free, but reservations are required for Sunday tours: call 577-5140.

5 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

6 WEDNESDAY

Children's Film Fest: "An American Tale"

11 a.m. and 1:30 p.m., Shoenberg Auditorium. Every Wednesday in July features films for kids and the young at heart. Doors open 30 minutes before showtime. $1 at the door.

8 FRIDAY

Members' Musical Evening: "Music at Twilight"

7:30 to 9 p.m., Spoehrer Plaza. An open-air concert featuring the Compton Heights Pep Band. Seating available. Free to Members.

Missouri Botanical Garden
CALENDAR OF EVENTS
July-August 1988

JULY 24 / HENRY SHAW'S BIRTHDAY PICNIC

5 to 8 p.m. Join us for a picnic on the Garden grounds in honor of Henry Shaw's 188th birthday. Clowns, music, cake and ice cream, plus a special party favor. Bring your own picnic, or order a box supper; reservations are required. Watch your mail for reservation information. For Members only.

9 SATURDAY

Walking Tour

1 p.m. See July 2 for details.

9-17 SAT.–SUN.

Henry Shaw Cactus Society Show

Opens at noon on Sat., July 9; open 9 a.m. to 5 p.m. daily, Ridgway Center. Display and juried show of a wide variety of cacti and succulents. Plants will be available for sale. Free.

12 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

13 WEDNESDAY

Children's Film Fest: "A Boy Named Charlie Brown"

11 a.m. and 1:30 p.m., Shoenberg Auditorium. See July 6 for details.

16 SATURDAY

"Puppets Galore"

11 a.m. to 5 p.m., Ridgway Center and grounds. Workshops and performances, co-sponsored by St. Louis Puppet Guild. Roving puppets, storytelling and other surprises for children of all ages. Workshops require advance reservations: call 577-5125 beginning Tuesday, July 5. Fees vary with activity.

Walking Tour

1 p.m. See July 2 for details.

Art by Older Adults

9 a.m. to 5 p.m., through August 14, Ridgway Center. Exhibit of works of art produced in classes held at the Garden. Free. (See page 15.)

17 SUNDAY

Walking Tour

2 p.m. See July 3 for details.

18 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. On-the-spot identification of plan and horticultural troubleshooting Master Gardeners and other experts. Free.

19 TUESDAY

Walking Tour

1 p.m. see July 2 for details.

20 WEDNESDAY

Children's Film Fest: "Snow White and the Seven Dwarfs"

11 a.m. and 1:30 p.m., Shoenber Auditorium. See July 6 for detail

23 SATURDAY

Walking Tour

1 p.m. See July 2 for details.

23-24 SAT.–SUN.

Refreshments for Sale

9 a.m. to 5 p.m., in the tent adjacent to Tower Grove House. In honor of Henry Shaw's birthday, July 24, the Tower Grove House Auxiliary will offer lemonade, ice tea and homemade cookies for s

4 SUNDAY

ıry Shaw's Birthday ebration

.m. to 4 p.m., Ridgway Center grounds. Activities in honor of Garden's founder include music, eshments, lifesize puppets, catures, storytelling and car- e rides to Tower Grove Park. e. (There will be a fee for car- e rides.) From 5 to 8 p.m., there be a picnic for Members only on grounds; *see highlight*.

TUESDAY

king Tour

m. See July 2 for details.

7 WEDNESDAY

ldren's Film Fest: "Bedknobs Broomsticks"

.m. and 1:30 p.m., Shoenberg itorium. See July 6 for details.

SATURDAY

king Tour

m. See July 2 for details.

e for the Future Exhibit

m. to 8 p.m. daily through ust 21, Ridgway Center. Educa- al exhibit illustrating how we anger the earth's environment how we can help make changes he better. Exhibit is by Com- Ground International, London, land. Free.

Louis Urban Gardening Fair

m. to 4 p.m., Ridgway Center. npetition and exhibition of fruits, etables, flowers, herbs and ned goods by local gardeners. es will be awarded at noon, wed by demonstrations and bits open to the public. Spon- ed by the Gateway Gardening ociation. Call 965-6813 or 2585 for more information. Free.

AUGUST

1 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See July 18 for details.

2 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

6 SATURDAY

Walking Tour

1 p.m. See July 2 for details.

7 SUNDAY

Walking Tour

2 p.m. See July 3 for details.

9 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

13 SATURDAY

Early Morning Stroll

5:30 a.m. The Garden opens early for a special morning stroll, rain or shine. (Sunrise is at 6:13 a.m.) Coffee will be provided. For Members only.

Walking Tour

1 p.m. See July 2 for details.

15 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See July 18 for details.

COMMON GROUND INTERNATIONAL

AUGUST 13/ETHICS OF THE ENVIRONMENT

A special forum sponsored by the Missouri Humanities Council, the state affiliate of the National Endowment for the Humanities

9 a.m. to 3 p.m., Ridgway Center. An international panel of speakers will address the issue of how ethics and ethical considerations can and do affect the decisions we make about the environment. Keynote address by Lady Jean Medawar, spokeswoman for Common Ground International and the Hope For the Future Exhibit (see July 30, below). Open to the public; $10 registration fee includes all discussion sessions and lunch.

16 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

20 SATURDAY

Walking Tour

1 p.m. See July 2 for details.

21 SUNDAY

Walking Tour

2 p.m. See July 3 for details.

23 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

27 SATURDAY

Walking Tour

1 p.m. See July 2 for details.

29 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See July 18 for details.

30 TUESDAY

Walking Tour

1 p.m. See July 2 for details.

Saturday, August 27 – Monday, September 5 (Labor Day)

13TH ANNUAL JAPANESE FESTIVAL

9 a.m. to 8 p.m. daily, Ridgway Center and grounds. A salute to the culture of Japan featuring the performing arts, food, music, arts and crafts and much more. Watch for more details; see page 20.

Ask the Answer Service

Summer Gardening

Do you have a plant question? Call the Horticultural Answer Service, Monday through Saturday, 9 a.m. to noon, at ***577-5143.***

Q. I have a nice red dahlia that flowers well, but all the blooms are small. How can I get larger blossoms?

A. Some dahlias will naturally produce larger blossoms than others, but you can encourage yours to have larger flowers by pinching out the tips of shoots when they have three pairs of leaves. Two new shoots will form at each joint. When six shoots have formed, remove the top two and the remaining four shoots will produce larger flowers.

Q. My sweet alyssum quits blooming around July. How can I encourage it to bloom all summer?

A. You may not be able to encourage it to bloom during the hottest summer months here in St. Louis. Sweet alyssum flowers best in cooler locales. It often shuts down flower production as temperatures soar. Shearing your plants back now will promote a tidier appearance. As temperatures drop, plants will again blossom and often reward you with vigorous blooms until frost.

Q. My irises did not bloom well this year. The plants seem very crowded. Do you think I need to divide them?

A. Sounds like a good idea. Irises are best divided in late July or early August. Clumps are easily lifted using a garden fork. Save the healthiest rhizomes from the clump, discarding the old centers and any soft pieces. Before replanting, enrich the soil generously with compost or other decayed organic matter. Dust any cut sections of rhizome with sulfur powder and replant with the roots spread out and the tops of the rhizomes slightly above ground. Water well.

Q. I have a number of brown patches in my fescue lawn. Down near the soil, there are silky webs with little brown caterpillars in them. What can I do?

A. Those are likely sod webworm larvae and their feeding is possibly the cause of those brown spots. The small golden-tan moths that fly up in front of your lawn mower are the adult pests. Large numbers of these moths are often a tip-off that you have a problem. Eggs laid by the adults hatch throughout the summer, but are most numerous in late July and August. Insecticides applied at this time will give the best results. In Missouri, Agricultural Guide No. 7201 "Sod Webworms as Pests of Lawns" provides complete details for control. This fact sheet is available for a small fee from any local University of Missouri Cooperative Extension office. The guide sheet No. 7200 "White Grubs in the Lawn" is also available from the same offices. If white grubs are pests in your lawn, insecticidal controls applied after July will yield the best results.

Q. I'm interested in planting a fall vegetable garden. Do you have any suggestions?

A. There is still time to plant many crops. As space becomes available, prepare the ground by spading the soil to a depth of six or eight inches. Incorporate a one- to three-inch layer of compost or apply one pound of 12-12-12 fertilizer per 100 square feet. Broccoli, cabbage and cauliflower plants can be set out about the last week of July. Carrots, beets, Chinese cabbage, kale, snap beans and quick-maturing varieties of summer squash can be direct seeded the last week in July. Be sure to keep the soil moist to ensure germination. Leaf lettuce, mustard, kohlrabi, turnip and winter radishes may be seeded by August 20. Spring radishes and succession savings of leaf lettuce may be planted even later.

Q. The lower leaves on my tomato plants get spots, then the leaves yellow, dry up, and fall off. What's wrong?

A. Your tomatoes may have an early blight fungus. Avoid overhead watering as the splashing may spread fungal spores. Spray or dust with a tomato fungicide. Selections such as 'Jet Star', 'Supersonic' and 'Roma' are somewhat resistant to early blight and grow well in our area.

Q. The tops of some of my onions have fallen over. Should I bend them all over to make them cure?

A. No. Breaking over the tops while they are still green will interrupt growth, and the bulbs will be smaller and won't keep as well. Wait until most of the tops have fallen over naturally. Pull the onions and leave them to air dry in the garden for a day or two. Finish curing by placing them on screens or hanging them in small bunches in a dry, sheltered site. Full air circulation for two or three weeks will be needed for complete curing.

TIMELY TIPS:

- In order to allow flower buds time to mature, don't pinch mums after mid-July.
- Save garden refuse for adding to compost piles, but discard seed heads and diseased plants.
- Remove spent flowers from all annuals to promote continued blooming.
- Plant or move Madonna lilies (*Lilium candidum*) now before growth resumes in fall.
- Divide or transplant oriental poppies as the foliage dies.
- Order spring bulbs now for fall planting. Plan on ordering a few extras to force indoors for winter blooming.
- Weeds will be easier to control in next year's garden if seed formation is prevented this year.
- Summer pruning of fruit trees in late August will produce a dwarfing effect and better size control.

—Chip Tynan, The Answer Service

FROM THE MEMBERSHIP OFFICE

FRAGRANCE FESTIVAL HIGHLIGHTS

The floral arranging workshop, directed by Barbara Brundage, the Garden's floral designer, was organized by the Members' Board. (Top right, from left to right): D'Arcy Elsperman, Ginny Senkosky, Mary Longrais, Sue Oertli, and Marian Gould of the Members' Board during the workshop. (Lower right): Suzanne McMillan, vice president of marketing, Tiffany & Company (left), with Dr. Peter H. Raven and Nora Stern during the "Breakfast With Tiffany's" benefit. Sponsored by Tiffany & Company, the elegant champagne breakfast featured the debut of the company's first original fragrance, *Tiffany*.

Record Membership Levels

Spring has been good to the Garden. In addition to rainbows of color on the grounds, Garden membership has attracted more than 1,700 new Members raising the total to an all-time record of 22,165.

Garden membership is the largest of any St. Louis cultural institution, and the largest metropolitan membership for botanical gardens worldwide. Membership totals are 10 percent higher than last year at this time, and have increased almost 45 percent in the last four years. The latter increase is the most accelerated of any other cultural institution in St. Louis for that period of time. For more information on becoming a member, call (314) 577-5118.

Trustee Profile

NORA STERN

Nora Stern's involvement at the Garden rivals that of Henry Shaw himself. Completing her 21st year on the Members' Board, Nora has also served as a Trustee since 1985. Her accomplishments through the years are many.

The Fragrance Festival, Nora's most recent undertaking, was an idea she knew would be a wonderful opportunity for the Garden. "The Fragrance Festival seemed to be a natural for us. The essence of fragrance is what we are all about and the Festival is a perfect way to market what we do at the Garden," Nora explained. She admits, now that the first festival is behind her, that she was extremely nervous about its success. She had no idea at its inception over three years ago that the Festival would be as complex as it was, involving a major shopping center and a number of sponsors. The only other Fragrance Festival, held in New York, is designed as an educational and commercial event. "What we did this year was twenty times larger than the New York Festival and we were able to expand it far beyond what I had originally hoped. The potential for improvement and expansion of the Festival here at the Garden is endless," Nora commented.

The Fragrance Festival isn't Nora's first experience with a special event. During her tenure on the Members' Board, including three terms as President, Nora has been responsible for other large benefits and fund raising events—the Chrysanthemum Ball with Gloria Vanderbilt and the 125th Anniversary Party, to name a few. It was Nora's idea to offer picnics and serve box lunches at the Garden, the format now used for the successful Rose Evenings held two nights each year for Members.

When asked what she enjoys most about her role at the Garden, Nora said, "The Garden makes it possible for me to be as creative as I want to be; to come up with exciting ideas like the Fragrance Festival. I find the opportunity to work with the Trustees, Members' Board, staff, and Dr. Raven a wonderful experience. The results of this strong cooperation have been tremendous.

"The 1988 Fragrance Festival is the most recent example of an event that accelerated growth in membership. It's exciting to look back to 1969, to my first term as President of the Members' Board when we had a membership of 2,200 and served drinks and hors d'oeuvres ourselves at premieres and previews. Now we are servicing over 22,000 Members with a fantastically talented membership that helps assure our success."

HENRY SHAW FUND COMMITTEE IS HONORED

At the Garden's Board of Trustees meeting on May 18, O. Sage Wightman, chairman of the Henry Shaw Fund committee, presented the results of the Fund's 1987 campaign. The Board honored members of the committee for their hard work on the Fund's behalf.

The Henry Shaw Fund is the Garden's annual effort to raise operating support for its many programs and services. Tax support through the Botanical Garden Subdistrict of the Metropolitan Zoological Park and Museum District is, of course, a major source of revenue for Garden operations, as is support from more than 22,000 Garden memberships. Together, these two sources provide income to cover nearly fifty percent of the Garden's operating expenses. Admission fees and grants from foundations and corporations cover even more of these operating expenses.

Yet these sources do not fund all of the Garden's activities in research, education, and display. Gifts to the Henry Shaw Fund from individuals and corporations make up the difference. Director Peter H. Raven likes to call the Fund the Garden's "margin of excellence."

Every fall, the Henry Shaw Fund conducts its annual appeal. The Garden contacts some of its Members by telephone. Others are asked by letter to consider a gift in addition to their memberships.

The Henry Shaw Fund committee is part of this overall effort. Committee volunteers personally and directly approach some of the Garden's most committed Members and other friends of the Garden to give through the Fund. In 1987, the committee's efforts brought in approximately $118,000 out of a Fund goal totaling $500,000.

In his presentation to the Board of Trustees, Wightman praised the committee's work as "extremely time-consuming," requiring "a great deal of planning and follow-up and dedication." Through their visits and telephone calls, the committee members shared their personal commitment to the Fund with potential donors.

Committee member Rob Williams put it this way: "Because the Fund supports the overall operations of the Garden, gifts made through the Fund give the institution the flexibility it needs" to fund the wide variety of projects the Garden undertakes each year.

Members of the Henry Shaw Fund committee honored at the May Board of Trustees meeting include (back row, left to right): Lucius Morse, David Wells, John Wallace, Patrick Ackerman; (front row, left to right): committee chairman O. Sage Wightman, Landers Carnal, Rosemary Carson, Mim Kittner, and Jules Campbell. Not able to attend were Andrew N. Baur, Walter Stern, Rob Williams, Robert Kresko and Hal Wuertenbaecher.

Library Receives Grant from Department of Education

The Garden library has been awarded a grant from the United States Department of Education to continue its ongoing project of reclassifying and recataloging its collections into an automated cataloging database (OCLC). The grant award of $253,320 for OCLC entry will be shared with The New York Botanical Garden. The Garden's share is $109,218. The facilities boast two of the nation's most comprehensive botanical libraries. Effective from Jan. 1, 1989 to Dec. 31, 1989, the award supports the completion of the project, which began in October 1978 with Department of Education funding.

The continued entry of the libraries' holdings into OCLC is significant because over 7,000 libraries use the system and rely heavily on remote access to the data through the use of computer networks. The two libraries hold a significant percentage of the world's printed literature on the following: plant systematics, plant distribution and floristic studies; plant identification; history of botany and horticulture; herbal literature; pre-Linnaean botany; and the biographies and bibliographies of botanists, plant explorers and horticulturists.

IMS Awards Garden $75,000

The Institute of Museum Services (IMS) has awarded the Garden one of its prestigious grants for 1988. Competition for these awards is strong, because they provide virtually unrestricted direct support for all types of museum activities. The program made 402 awards out of 1311 applications.

The Garden received $75,000, the maximum grant made by the IMS. The award is based on the strength and quality of the applicant, as defined by its management of available resources to provide the best possible services to its community and the general public.

The IMS is an independent federal agency established by Congress in 1976 to assist museums in their efforts to preserve the nation's cultural, historic and scientific heritage.

NEWS FROM TOWER GROVE HOUSE

Tower Grove House Accepted by Victorian Society in America

Tower Grove House has been accepted as a member of the Victorian Society in America. The society is a companion organization of the English Victorian Society, which was among the first groups in the world organized to support the recognition and preservation of nineteenth-century architecture. Built in 1849, Tower Grove House has been renovated and is historically authentic.

The Victorian Society in America brings together lovers of Victorian architecture, decorative arts, painting, music, sculpture, photography, literature, gardening, craftsmanship and social history. The society holds an annual meeting in various American cities; an autumn symposium on a special topic of nineteenth-century America; summer schools in England and America for graduate students and professional persons in allied fields; and study tours which have taken members as far afield as Victorian India. There are 36 state, local and special interest chapters of the Victorian Society in America.

Tour Guides Needed

The Garden is looking for volunteers to lead tours of Tower Grove House, Henry Shaw's country home. The house is open seven days a week from 10 a.m. to 4 p.m. Tour guides are especially needed on Mondays and Tuesdays from 1 to 4:30 p.m., and mornings and afternoons on Saturdays and Sundays.

Volunteer tour guides interpret the Victorian era and the lifestyle of Shaw, one of the most prominent and interesting citizens of St. Louis during the nineteenth century. For more information, please call Jeanne McGilligan at 577-5187.

IN MEMORIAM

Julia M. Lamy Leaves Bequest

Julia M. Lamy will certainly be missed at the Garden. Most especially she will be missed at Tower Grove House, where she served on the historical committee and made an outstanding contribution of her time and talent.

Now, through the terms of her will, Mrs. Lamy has provided greatly needed support to Tower Grove House, her favorite area of the Garden. Visitors to Tower Grove House will benefit from her bequest for years to come.

Mrs. Lamy recently died at age 73. Only a few months earlier, her husband Charles had preceded her in death. Both generously supported the Garden and its projects, among their many other civic and cultural interests throughout the St. Louis area.

The Lamys are survived by three daughters, Julia Maffitt Lamy of St. Louis, Mary Lamy Phillips of Boulder, Colorado, and Isabel Lamy Lee of Atlanta, Georgia. Julia recently presented the Garden with her mother's bequest on behalf of the Lamy family.

Tribute gifts made in memory of both Mr. and Mrs. Lamy have been listed in several past issues of the *Bulletin*.

Rate Increase at Garden

On April 6, 1988, the Metropolitan Zoological Park and Museum District approved a rate increase at the Missouri Botanical Garden as recommended by the Botanical Garden Subdistrict. Effective June 1, 1988, admission at the Garden will be $2 for adults, $1 for senior citizens. Children aged 12 or younger and Garden members receive complimentary admission. The Garden will retain its two free mornings, Wednesday and Saturday, when all are admitted free before 12 noon.

CONGRATULATIONS to the winners of the Members' Arbor Day essay contest: Meagan Threlkeld (age 7) won brunch for four at the Gardenview Restaurant; Stephen Mohrman (age 6) won a $25 gift certificate from the Garden Gate Shop.

Raven Elected to American Philosophical Society

Peter H. Raven, director of the Garden, has been elected to the American Philosophical Society, the oldest learned society in the United States. Founded by Benjamin Franklin in 1743, the society is one of the most prestigious of its kind and recognizes achievement in sciences, letters and the arts.

The Philadelphia-based American Philosophical Society regularly supports research and scholars through a program of grants. It also publishes scholarly monographs and maintains a library rich in materials on the history of science.

Membership in the American Philosophical Society is limited to about 500 residents representing 30 states, and 125 foreign members representing almost two dozen countries. Some of the current members include J. William Fulbright, the Rev. Father Theodore M. Hesburgh, William Hewlett, Robert S. McNamara, Eugene Ormandy, David Rockefeller, Charles Scribner, Beverly Sills, Barbara McClintock, Andrew Wyeth, Gunnar Myrdal, Andrei Sakharov and St. Louisan W. Maxwell Cowan. Past members have included George Washington, John Adams, Thomas Jefferson, Alexander Hamilton and Thomas Paine.

Of the 525 people who have received the Nobel Prize, 185 have been members of the society.

Older Adults Exhibit Art Work at the Garden

During the past year more than 100 older adults participated in a series of drawing, writing, painting and nature craft classes held at the Garden. The classes, designed to showcase the artistic abilities of older adults and show the inspirational power of the Garden, produced a wealth of fine works of art. A selection of these works will be on exhibit July 16 through August 14 in the Ridgway Center during regular hours.

The classes were offered through the Garden's Samuel D. Soule Center for Older Adults and funded by a grant from the Arts and Education Council of Greater St. Louis/CAMELOT Special Projects Fund. Instructors for the classes came from the Garden and through the Older Adult Service Information System's Older Adult Peer Leadership Program (OASIS-OAPL).

From the Garden Gate Shop

Celebrate the bounty of summer! For your outdoor entertaining the Shop offers a wide array of plastic glasses, trays and salad bowls, festive paper napkins, and citronella candles. The plant shop features a glorious display of blooming plants, plus tools and special gardening accessories.

In honor of the Japanese Festival the Shop will feature a wide selection of oriental gifts: ceramics, figurines and costumed dolls; windsocks, kites and streamers; silk fans, paper carp and gold dragon lanterns; rosewood fish, origami kits and hand drums. In the plant shop, don't miss a marvelous selection of bonsai. Stop by during the Festival for a gift from Japan! As always, gift certificates are available.

Botanical Garden Subdistrict Elects Officials

The Commissioners of the Botanical Garden Subdistrict held their annual meeting on May 3, 1988 at the Garden. The following commissioners were elected officers for 1988-1989: Walter G. Stern, chairman; Marjorie M. Weir, vice chairman; George H. Walker III, treasurer; and Doris Moore-Glenn, secretary. The immediate past chairman of the Commission is Pamela Shephard. The Commission of the Botanical Garden Subdistrict is a Subdistrict of the Metropolitan Zoological Park and Museum District of the City of St. Louis and the County of St. Louis.

Behind the Scenes

Garden Appoints Research Department Manager

W. Douglas Stevens has been appointed research department manager at the Garden. He will assist director of research Enrique Forero in the administration of the tropical botany research program. The position is a new one. Dr. Stevens joined the Garden in 1977 as B. A. Krukoff Curator of Central American Botany. His research has been divided between the study of the flora of Nicaragua and an intensive study of Asclepiadaceae (the milkweed family) in Latin America.

In addition to assisting Dr. Forero in the administration of the program, Stevens is working on a plant manual for Nicaragua that will be published in Spanish. He is also writing articles on his findings on the milkweed family.

Tributes

MARCH - APRIL 1988

In Honor Of:

Mr. and Mrs. Clarence Ansell
Mr. and Mrs. Carl F. Ritchie

Adam and Judy Aronson
Dr. and Mrs. Hyman R. Senturia

Laura Bailis
Mr. and Mrs. Richard P. Sher

Mr. Gene Barken
Mr. and Mrs. Bernard Barken

Mrs. I. Baumgarten
Mr. Melroy Hutnick

Mr. and Mrs. Saul Brodsky
Mrs. Ernest A. Brooks II

Sister Mary Byles
Mrs. June C. Kravin

Helen Cohen's Son
Ms. Joan Corwin

Mrs. Marguerite Connors
Dr. and Mrs. Michael H. Winer

Steven Frank
Mr. and Mrs. Milton J. Canis

Mr. Courtney Gould
Mr. and Mrs. Bernard Barken

Mr. and Mrs. Pat Gunter
Mr. and Mrs. H. Lynn Boardman

Ms. Ida Heimburger
Miss Doris B. Rolf

Mr. James Henderson
Mrs. Margaret L. Henderson
Nan L. Henderson

Dr. Peter Hoch
Great Decisions

Mr. August H. Homeyer
Mrs. John R. Ruhoff

Mrs. J. A. Jacobs
Mrs. Helen C. Maurer

Mr. Jack Jennings
Frontenac Garden Club
Tealwood Garden Club

Mrs. J. Eugene Johanson
Mr. and Mrs. George W. Achuff

Mrs. Willis Jones
Dr. and Mrs. John V. Reilly

Mrs. Ruth Katz
Mrs. Bonnie L. Rubin

Dr. Lenard Kent
Mr. and Mrs. Harvey Hieken

Mr. and Mrs. Paul Kranzberg
Mr. and Mrs. Douglas S. Brown
Mrs. Blanche J. Freed
Mrs. Nancy Sachs

Mr. and Mrs. Milton Kushkin
Ms. Myrtle G. Weinrobe

Mr. and Mrs. Glenn Lancaster
Mr. and Mrs. Erwin R. Breihan

Mr. Henry Lowenhaupt
Mr. and Mrs. Myron Glassberg

Mrs. Kathleen Luepke
Mr. and Mrs. Andrew D. Ruhlin

Marshall Magner
Mr. and Mrs. Robert J. Higgins, Jr.

Mr. John Masek
Farm Trails Garden Club

Mr. and Mrs. Jerry Michelson
Mr. and Mrs. Macy S. Abrams

Mrs. John C. Morfit
Mrs. William Bixby, Jr.

Mr. and Mrs. Irving Olian
Mr. and Mrs. Philip N. Hirsch
Mrs. Frances Rothman

Danielle Elizabeth Parrott
Craig William Parrott
Mrs. Jan Parrott
Audrey M. Welch

Mr. and Mrs. John Polzin
Mrs. Beulah McNulty

Gladys and Ray Raborn
Norman and Virginia Eshbaugh
Judge Walter and Helen Steinburk

Mrs. Martin Rockmore
Mr. and Mrs. Bernard Barken

Mrs. Harry Rosenbaum
Mr. and Mrs. Alexander Schonwald

Mrs. Joan Rosenblum
Mr. and Mrs. Lester R. Adelson

Lewis and Jean Sachs
Mr. and Mrs. Phillip Schreiber

Mrs. Sydney M. Shoenberg, Jr.
Mrs. Harry W. Loeb
Mr. and Mrs. Louis R. Putzel
Dr and Mrs. Llewellyn Sale, Jr.
Mr. and Mrs. James W. Singer, Jr.
Mrs. Florence G. Stern

Mr. Ralph Smith
Miss Marian Barnholtz

Mr. and Mrs. James Spoehrer
Mrs. Hermann F. Spoehrer

Mrs. Richard Teague
Dr. and Mrs. Joseph W. Towle

Patricia and Thomas Toch
Mrs. Maria J. Weingartner

Mrs. Biron A. Valier
Mr. and Mrs. J. Marion Engler

Mr. and Mrs. Norman Wielansky
Melroy and Marian Hutnick

Mrs. J. Gates Williams
Mr. and Mrs. H. Leighton Morrill

Mrs. Mary Randolph Williams
Anonymous

Mrs. Susie Yoder
Mr. and Mrs. Charles J. Cook

Mr. George Zatlin
Yuppie Landscaping Corporation

In Memory Of:

Mr. Cecil Acklin
Mr. and Mrs. Earnest R. Doty

Martha Akers
The OCS Group

Dr. Hollis N. Allen
Mr. and Mrs. Edmund A. Luning

Mr. Arthur W. Altvater
Mrs. Carolyn B. Pratt, Allison and Jeff

Mrs. Joanne Anderson
Mr. John R. Anderson

Mr. William Archer, Jr.
Richard Archer Family

Mr. Max Q. Arens' Father
Dr. and Mrs. Gregory A. Storch

Mrs. Sidney Baer
Mrs. Samuel D. Soule

Mrs. Harriet Rodes Bakewell
Boxwood Society of the Midwest
Mr. and Mrs. John R. Gardner
Mr. and Mrs. Douglas V. Martin III
Dr. and Mrs. Nicholas Samaras
Mr. and Mrs. Nicholas Scharff II

continued on next page

Mrs. Dorothy N. Barthels
Mrs. Lois B. Punshon
Mr. Fred H. Baumgarth, Sr.
Mrs. Sue M. Spann
Mr. Charles Beeler
Mr. and Mrs. Richard Lang
Mr. William J. Beezley
Mr. Theodore W. Fivian, Jr.
Mr. and Mrs. C. G. Seckel
Mr. Oliver J. Belzer
Frielingsdorf Family
Mr. Joseph Besancenez
Donald F. Barr Family
Lucy Bixby
Mr. and Mrs. John C. Kane
Mr. William Blanke
Mr. and Mrs. Andrew H. Baur
Mr. Harry Blumenthal
Mr. and Mrs. Leon M. Bodenheimer, Jr.
Mrs. Lucile N. Bodine
Mr. and Mrs. Bernard Barken
Mr. Milton Bodman
Mr. and Mrs. Clinton J. Phillips
Mrs. Maurice Bone
Mr. and Mrs. Jack Carey
Mrs. Anna Pauline Bonney
Mrs. Harry Knopf
Nell Brill
Clayton Garden Club #1
Clarence Bruce's Mother
Ms. Pamela Fournier
Mrs. Edith T. Brumback
Miss Jean G. Brumback
Jean Brushaber
Mr. and Mrs. Robert Anderson
Mr. and Mrs. Robert C. Ewen
Mr. and Mrs. Robert N. Hendershot II
Mr. and Mrs. Paul L. Sherman
Mr. and Mrs. Stephen D. Smith
Mr. and Mrs. Timothy P. Smith
Ms. Karen S. Tumbrink
Mr. and Mrs. David J. Vaughn
Mr. Herbert A. Bueltmann
Mr. Alfred J. W. Loftus
Mr. and Mrs. John R. Mykrantz
Mrs. Geraldine Epp Smith
Mr. Paul W. Canavan
Chuck Bogard
Vi Bogard
Bob Carder
Jim Cuidon
Linnet Dean
Dale DeWitt
Chet Gawlick
Pete Glass
Larry Gray
Evelyn Greaves
Ms. Amelia Isensee
Betty Lutz
Muriel Morose
Charlie Morgan
Ms. Bonnie Olds
Jim Reynolds
Mike Rudman
David Schmidt
Lonnie Schmidt
Nancy Schmidt
Mr. and Mrs. Robert Schmitt
Miss Lynda Stair
Mrs. Rose Charleville
Mr. and Mrs. Frank O. Bittner III
Mr. Joe Claybrook
Mr. and Mrs. Arthur W. Anderson
Mildred Clinger
Mr. John Basch
Mr. Frederick L. Heger
Mrs. Rose Collins
Mrs. Mary Jo Ward and Family

Mr. Alfred Crancer, Sr.
Mr. and Mrs. Pat Adams
Adderton Brokerage Co.
Mr. and Mrs. William T. Anthes
Mr. and Mrs. Alan Astasauskas
Mr. and Mrs. Todd Bleakley
Mr. and Mrs. Joe Bogacki
Mr. and Mrs. Roland Burjeck
Bill Chambers Family
Cohen Appliance and TV Center
Mr. and Mrs. Donald J. Cole
Ms. Barbara Crancer
Ms. Florence C. Crancer
Mr. and Mrs. Lester A. Crancer, Jr.
Mrs. Virginia Crancer and Family
Mr. and Mrs. Robert D. Cranford
Daugherty Family
Mrs. Sophia Del Vecchio
Mr. and Mrs. Bob Dorsey
Mr. and Mrs. Gary Gnuse
Mr. and Mrs. Stephen J. Gosoroski
Mr. and Mrs. Hale Grebe
Mr. and Mrs. Harvey Hartman
Mr. and Mrs. Arthur Herder
Tim and Elfriede Jerry
W. J. Jones & Company
Mr. and Mrs. Don Karr
Mr. and Mrs. Ronald P. Keller
Kidswear For Less Staff
Mr. Robert L. Larsen
Ms. Florence Lischer
Mr. and Mrs. Leland J. Mast
Mr. and Mrs. Jim Masterson
Mr. and Mrs. Charles R. Mittler
Mr. and Mrs. Kent Novak
Pamela O'Connell
Mr. and Mrs. Bob O'Toole
Premier Marketing, Inc.—Wichita, Springfield and Shawnee Mission
Mr. and Mrs. Ralph W. Rice
Mr. and Mrs. Rodney Riggs
Mr. and Mrs. Mike Ross
Mr. Alan Roth
Mrs. Linda Roth
Mr. and Mrs. Edward Shipper
Mr. and Mrs. George Snell
Arlene and Gary Southard
Worth Southard
Mr. and Mrs. Adam Spiegel
The Tuesday Bowlers
Mr. and Mrs. W. H. Thias
C. E. Weiss Family
Dr. and Mrs. Edward R. Westaver
Mr. and Mrs. Lawrence Zenk

Mr. Joseph Cronin
Mr. and Mrs. Dale W. Ehlers
Mr. William Crowell
Mr. and Mrs. Lloyd W. Hager
Mrs. Arthur Diebold
Miss Melba E. Aufderheide
Mr. Herbert F. Doehring
Mr. and Mrs. Leonidas P. Efthim
Shirley Drohlich
Hilda and Marc Becker
Janis and Frank Gollub
Gloria and Les Portnoy
Juanita and Aubrey Yawitz
Mr. Paul Dunajcik
Dr. and Mrs. David R. Herbold
Mrs. DuPont
Ms. Marie Bone
Mr. James D. Edgar
Elizabeth R. Burst
Mrs. Gladys Cramer
Mr. and Mrs. Vance C. Hodge
Mr. and Mrs. John Hummel
Mr. and Mrs. Douglas A. Jacobs
Mr. and Mrs. Michael Sneden
Mr. and Mrs. Ralph K. Soebbing
Carolyn Steenrod
Mr. and Mrs. Jim Whitney
Mr. and Mrs. Roger Edgar
Dr. and Mrs. Edward W. Szoko
Mrs. Dorothy Irene Ellis
Mr. and Mrs. Russell Ashton
Mr. Arthur R. Elsperman
Grace and Gary Corbin
Mrs. Edith Heath Erker
Ms. Virginia C. Culver
Mr. Mike Ethell
Mr. and Mrs. Donald H. Long
Edith Evertz
Mr. Silas C. Dietz
Mr. and Mrs. Joseph E. Hahn
Mrs. William H. Leyhe, Jr.
Mr. and Mrs. William Leyhe III
Mrs. A. C. Schuchardt
Mr. and Mrs. Sheldon H. Stock
Louis Faggetti
Ms. Harriet Bierman
Mrs. Rosemary Bucher
Melinda K. Fallert
Alice Becker
Mary Dillon
Jill Frey
Nadine Kouba
Mrs. J. C. Kraus
Mrs. Joy Last
Miss Jean Read
Marion Reisch
Frances Resnik
Mrs. Evelyn Schachner
Mr. Clarence C. Fawcett
Dr. and Mrs. Thomas C. Martin
Mr. Son Fesler
Mr. and Mrs. Melburn E. Johnston
Mrs. Gertrude Fliegl
Fred and Audrie Bausch
Dorothy Ens
Dallas and Rosalie Frillman
Mr. and Mrs. Edward E. Grote
Lucille Johnson
Mary Kern
Mrs. Virginia Kovacavic
Sue MacDonald
Mr. and Mrs. Joseph H. Meis
Irene Merlotti
Dave and Doris Morehead
Zena Nolan
John and Dorothy Ryan
Louise Shy
Mrs. Norma Silber
Estella Weiss
Dr. Joseph Flynn
Mr. and Mrs. William A. Frank
Mrs. Bernita Ford
Mrs. Howard E. Prater
Mr. Ricardo Forero
Missouri Botanical Garden—Board of Trustees
Dr. and Mrs. Peter H. Raven
Mrs. Jeanette Fowler
Mr. and Mrs. Michael Grady
Mr. Walter Franke, Sr.
Mr. and Mrs. Arthur E. Carlson
Mr. Eugene B. Gabianella
Mr. and Mrs. Joseph Bacino
Mr. Aldino Gaia
Miksicek Family
Mrs. Rebecca Gilliam
Mr. and Mrs. Harry Sibley
Mr. Alan Godlewski
Mr. and Mrs. Todd Arnold
Mrs. William Baldwin
Mrs. Charlotte Ballard
Boxwood Society of The Midwest
Franklin Brooks
Mrs. Joyce M. Broughton
Ruth Brown
Mr. and Mrs. William H. T. Bush
Mrs. James Butler Bushyhead
Mr. Donald Campbell
Mr. Michael Claffey
Mr. Sidney S. Cohen
Ms. Jo Ann Collins
Mr. and Mrs. Charles J. Cook
Mrs. Dwight W. Coultas
Mrs. John E. Curby
Mr. and Mrs. Richard H. Daley
Joyce and John Dill, Jr.
Mr. Don Dotzauer
Mr. and Mrs. Ernest A. Eddy, Jr.
Mr. and Mrs. Alvin Erdman
Mrs. Linda Eves
Mr. Robert Eves
Mr. and Mrs. Robert B. Forbes
Mr. Lee B. Fox
Mr. and Mrs. D. Goodrich Gamble
Garden Club of St. Louis
Garden Guides—Missouri Botanical Garden
Gartland Co., Inc.
Mrs. Florence S. Guth
Mr. and Mrs. Harry M. Hansen
Mr. and Mrs. Whitney R. Harris
Mr. and Mrs. W. E. Hinck
Mrs. Jane A. Jacobs
Ms. Gail Johns
Ms. Marcia M. Kerz
Mr. and Mrs. Frank G. Kirtz
Dr. and Mrs. William S. Knowles
Mr. and Mrs. Charles E. Kopman
Mr. and Mrs. Robert E. Kresko
Ladue Garden Club
Dr. Robert L. Lamberg
Mr. Andrew T. Leiser
Ms. Barbara Mack
Dr. and Mrs. George A. Mahe
Maritz, Inc.
Mr. Charles E. Main
Laura McCanna
Members Board—Missouri Botanical Garden
Meramec Community College—Dept. of Horticulture
Dr. William D. Merwin
Mr. and Mrs. Bruce Mills
Mr. and Mrs. Shadrach F. Morris, Jr.
Dr. Julia K. Muller
Joan S. Murphy
Mrs. Sally Nikolajevich
Peg Grigg Oberheide
Mr. and Mrs. Charles W. Oertli
Mrs. Betsy H. O'Herin
Miss Lucille Papendick

continued on next page

Tributes

continued

Mr. Edwin A. Paradoski
Mr. and Mrs. John H. Payne
Mr. and Mrs. Ervin A. Pfeiffer
Phipps Friends
Mr. and Mrs. Vernon W. Piper
Jan and Greg Poelker
Mr. and Mrs. Joseph Pulitzer, Jr.
Dr. and Mrs. Peter H. Raven
Miss Patricia Rice
Dr. and Mrs. Leslie Rich
Mr. Warren G. Roberts
Mr. and Mrs. George S. Rosborough, Jr.
Dr. William J. Ross
Mr. and Mrs. Joseph F. Ruwitch
St. Louis Herb Society
Ms. Kathy Sauer
Mr. and Mrs. Louis E. Sauer
Mr. and Mrs. Donald A. Sauve
Mr. Earl K. Shreckengast
Mrs. Norma Silber
Mr. and Mrs. H. Parker Smith
Mr. and Mrs. Robert Brookings Smith
Mrs. Lloyd C. Stark
J. D. Steppler
Mr. and Mrs. Cornelius F. P. Stueck
Mr. and Mrs. John R. Sutter
Mrs. Martha Love Symington
Mr. and Mrs. Charles L. Tooker
Grace Tracy
Ms. Carol A. Unger
Dr. and Mrs. Henk van der Werff
Mr. and Mrs. John K. Wallace, Jr.
Mr. and Mrs. Walter B. Ward
Mrs. S. A. Weintraub
Mr. Harry Wuertenbaecher, Jr.
Mrs. Isabelle Zimmerman

Mrs. Gladys Grant
Book Club
Mr. and Mrs. David Brown
Commerce Bank of St. Louis—Trust Dept.
Mr. and Mrs. Eugene S. Davis
Egilsrud Family
Mrs. Julius A. Gewinner
Keith and Martha Greenough and Children
Mr. David Harrington
Mr. and Mrs. Fred R. Harrison
Mr. and Mrs. E. C. Henderson, Jr.
Mr. and Mrs. John Henderson
Mr. and Mrs. Warren F. Knapp
Mr. and Mrs. Carl R. Lovitt
Mr. and Mrs. Edward McGrath
Mr. and Mrs. Harold J. Menteer
Mr. and Mrs. Marc G. Menteer
Mr. and Mrs. Percy Michener
Mr. and Mrs. Earl Palmquist
Mr. and Mrs. James Palmquist
Mr. and Mrs. Francis H. Piepmeier
Mr. Timothy Schmutz
Mr. Edmund Strunk and Family
Sverdrup Corporation—Bridge Structures Section
Grace Tracy
Mrs. John C. Vogel

Mrs. Felicia C. Gravel
Mr. William L. Tybura

Mr. Owen D. Gray
Mr. and Mrs. William Serbi

Mr. Stephen Grese
Miss Irene Steinman

Mrs. Ophelia Groennert
Mr. and Mrs. Edwin Banstetter

Tony Grosch's Mother
Mr. and Mrs. Phillip Schreiber

Mrs. Helen Hadley
Neighborhood Bridge Club

Mrs. Kathryn Hagist
Mr. and Mrs. Richard W. Sterling

Anita Handelman
Mr. and Mrs. Richard Halpern
Ms. Meryl Hoffman

Mrs. B. Fleming Harper's Mother
Mrs. Henry L. Freund
Robert Lewin

Mrs. Hortence Hartz
Mr. and Mrs. Philip N. Hirsch

Mildred V. Harvey
Mr. and Mrs. John J. Moeller

Mrs. Cynthia Polk Hayward
Miss Mary E. Bascom
Mr. and Mrs. Henry Belz III
Mr. and Mrs. F. Crunden Cole
Mr. and Mrs. Bertram B. Culver, Jr.
Dolores Exler
Mrs. James Lee Johnson
Senator and Mrs. A. Clifford Jones
Mrs. John Macrae
Mr. and Mrs. James A. Singer
Mrs. Whitelaw Terry
Ms. Mary Jane Weissenberger

Mrs. Katherine Hedley
Mr. and Mrs. Oscar Bray
Mr. and Mrs. Erwin R. Breihan
Mr. and Mrs. John R. Sutter

Mr. Joe Helms
Mr. and Mrs. Harold J. Menteer

Mrs. Rolla Hennis
Mrs. Margaret W. McCormick

Susie Hochman's Father
Mr. and Mrs. Richard Halpern

Dr. Albert H. Hotz
Mrs. Roberta Hotz

Mr. Paul Hunter
Mr. and Mrs. Dean Garner

Mrs. Rose F. Iffrig
Ms. Linda L. Iffrig

Mr. James Ingham
Mrs. Spencer H. Robinson

Mrs. Elizabeth Terry Johnson
Mrs. Newell A. Augur
Mr. and Mrs. William Barnes III
Mr. and Mrs. John Brodhead, Jr.
Mr. and Mrs. Norman W. Halls
Mr. and Mrs. Robert T. Hensley, Jr.
Mr. and Mrs. Henry H. Hitchcock
Mr. and Mrs. W. Boardman Jones, Jr.
Mr. and Mrs. John K. Lilly
Mrs. Frank Mayfield
Mrs. Raoul Pantaleoni
Mr. and Mrs. Robert Brookings Smith

Mrs. Roy Johnson
Mr. and Mrs. George Goding

Mrs. Frederika Juergens
Mrs. Kathryn Boullion
Mr. and Mrs. David Brown
Mr. and Mrs. Harold J. Menteer
Mr. and Mrs. Marc Menteer

Mrs. Lillian Katzman
Mr. and Mrs. Charles J. Cook
Mr. and Mrs. Philip N. Hirsch
Mrs. Frances Rothman
Mrs. K. F. Sherman

Mrs. Richard Kaufmann
Mr. and Mrs. Leon M. Bodenheimer, Jr.

Master John Keith
Mr. Stephen M. Yelton

Mrs. Anne Kessler
Mr. and Mrs. Harvey Shapiro

Mrs. Ruth C. Kiburz
Mr. and Mrs. George Alles
Mr. and Mrs. Herbert Booth
Mr. and Mrs. Dean Curtis
Grant Farm Trails Women's Club
Mrs. William C. Hoerr
Mr. and Mrs. Don Leeman
Mr. and Mrs. Melvin Oelze
Mr. and Mrs. Jack Seiler
Mrs. John Simpson
Mr. and Mrs. J. Traub
Dr. and Mrs. A. Von Rump

Mrs. John B. Kirchner
Mrs. Charles F. Badino

Mrs. K. Kleeb
Mr. Raymond H. Samuels

Mrs. Lottie Klein
Dr. and Mrs. Donald Ames

Virginia Klein
Mr. and Mrs. Charles J. Cook

Mrs. Walter R. Knox
Mr. and Mrs. Robert H. Harper
Texas Bridge Friends

Mr. William T. Koken III
Mr. George Bishop
Mr. and Mrs. Edwin F. Guth, Jr.
Mr. and Mrs. Guy C. Lamson, Jr.

Mrs. Lillian Kopman
Mr. and Mrs. Lester R. Adelson

Mr. Edward Korn
Dr. and Mrs. Michael H. Glines

Barbara A. Kruse
Alice Becker
Mary Dillon
Jill Frey
Nadine Kouba
Mrs. J. C. Kraus
Mrs. Joy Last
Miss Jean Read
Marion Reisch
Frances Resnik
Mrs. Evelyn Schachner

Mrs. Dorothy Kueker
Mr. and Mrs. Edwin Banstetter

Mr. Warren Lammert
Mr. and Mrs. Samuel M. Kennard III

Mrs. Jay Lapin
Mr. and Mrs. Bernard Barken

Dorothy Rosenbaum Laser
Ms. Alice J. Adcock
Norma L. Buijs
Dr. and Mrs. Peter H. Raven

Pat Leigh's Mother
St. Louis Herb Society

Mrs. Mildred LeMaster
Dr. and Mrs. Jack Zuckner

Ms. Maria Liese
Mr. and Mrs. Paul J. Levy

Pauline Liggett
Mr. and Mrs. R. E. Bates
Mr. and Mrs. George Koob
Mr. and Mrs. Sanford Lebman
Mrs. David J. Newbern

Mrs. Katherine Elder Linman
Falls Hershey Family

Mr. William Livingston, Sr.
Mr. and Mrs. Craig Mold

Mrs. Lord
Mr. and Mrs. Richard T. Miller

Mrs. Milton Lubin's Mother
Mr. and Mrs. Burton Greenberg

Mr. Jack Lubowitz
Mrs. Gena Fish
Mrs. Georgia Sallee

Miss Olinda Luebbert
Mr. and Mrs. Alvia D. Voss

Mrs. Margaret Mae Lueders
Mr. and Mrs. Harvey Hieken

Mr. Wilhelm Mayer
Mr. and Mrs. Ralph K. Soebbing

Mr. Charles McAlpin
Mrs. Fred Wulfing

Mrs. Vitula McCutcheon
Mr. John D. McCutcheon

Mr. William A. McDonnell
Mr. and Mrs. Thomas W. White IV

Mrs. Helen W. McPheeters
Mrs. Elizabeth S. Foster

Mr. Hugh McPheeters, Jr.
Mr. David A. Blanton III
Mr. and Mrs. Lloyd W. Hager
Mr. and Mrs. John M. Hall, Jr.
Virginia S. Pentland

Mr. Thomas McPheeters
Mr. and Mrs. Samuel M. Kennard III

Mrs. Marjorie Mead
Mr. and Mrs. Bruce Fleissig

William Meisberger
Mr. and Mrs. Kensinger Jones

Mr. Harry Mendelson
Mr. and Mrs. Irwin R. Harris

Mrs. R. Menut
Miss Nell Shannon

Mrs. Mildred Miller
Mrs. Edith R. Kelly

Mrs. Walter Miller, Sr.
Mrs. Margie Witt

Mrs. Ruth Moellenhoff
Mr. Dale L. Boring

Mrs. Ruby Moll
John Roos Family

Miss Joanne Monterubio
Mr. and Mrs. James Rothbarth

June Moore
Mr. and Mrs. Bernard A. McDonald

Lt. Karl Moore
Mr. John A. DeMonte

Mrs. Betsy Ann Morris
Mrs. Lottie Hegger
Miss Bernice Snelson

Mrs. Stanley Morse
Mr. and Mrs. George Barnes, Jr.
Mr. and Mrs. Robert L. Blanke, Jr.
Ms. Katherine W. Burg
Mr. and Mrs. J. Marion Engler
Mrs. Elizabeth S. Foster
Mr. and Mrs. Edwin F. Guth, Jr.
Mr. and Mrs. J. Joseph Horan

Mr. and Mrs. Samuel M. Kennard III
Mr. and Mrs. Tom P. Kletzker
Mr. and Mrs. Robert D. Lewis II
Mrs. R. H. McWilliams
Mr. and Mrs. H. Leighton Morrill
Mr. and Mrs. Clifford W. Murphy
Mr. and Mrs. Fred A. Oberheide
Mr. and Mrs. W. Anderson Payne
Planters' Club
Dr. and Mrs. T. E. Sanders
Mr. and Mrs. George W. Skinner
Mr. and Mrs. Frederick Taussig
Mr. and Mrs. Frank L. Thompson
Dr. and Mrs. James K. Turner
Mrs. Daniel Upthegrove

Mrs. Stratford Lee Morton
Boxwood Society of the Midwest
Mr. and Mrs. D. Goodrich Gamble
Mrs. Clara Ann Henry
Mr. and Mrs. Raymond C. Jaudes
Dr. and Mrs. Peter H. Raven
Mrs. Arthur Stockstrom

Mr. David Moslanka
Mrs. A. Wessel Shapleigh

Mr. Carl Muckle
Mr. and Mrs. Merlyn M. Hoffman

Mr. Harry Mueller
Mr. and Mrs. Harold J. Menteer

Mr. Ralph Mueller
Mrs. Harriet Reis

Mr. Norval R. Murray
Mrs. Norval R. Murray

Mrs. Neal
Wind Family

Mr. Chapin Newhard
Mr. and Mrs. Samuel M. Kennard III

Mr. Odus Newman
Mr. and Mrs. Dan D. Schopp

Mr. and Mrs. Irv Olian
Mr. and Mrs. Albert Gerber

Jim Orling's Father
Mike and Emily Grady

Mrs. Orr
Mr. and Mrs. Charles C. Sisler

Marcella Owens
Barbara Boyd
Mrs. Claranne Henry
Irene Paul

Ms. Cathy Pelletier
Mr. and Mrs. Rader Walker

Mr. Lance Perry
Mr. Joseph O. Heckman
Mr. Charles R. Jarman

Mrs. Olga Pesch
Mr. and Mrs. Russell G. Guese

Mrs. John Pinter
Mr. and Mrs. Roger W. Shaw

Barclay Plager
Mr. and Mrs. Bernard Barken

Mr. Leonard Rahn
Mrs. John Downen

Miss Nancy Raisher
Ms. Diane Woepke

Mr. William J. Redburn
Mr. John R. Overall

Mr. John Reynard
Saba Bologna
Bill Carroll

Mrs. Rhobabeh
Mr. and Mrs. Russell C. Hazelton

Ruth Robinson
Mr. and Mrs. Carl Freeborg
Mrs. Jack B. Schilling

Mrs. Edward Roehr
Mr. and Mrs. Edwin F. Guth, Jr.

Mr. and Mrs. Edward R. Roesler
Mr. and Mrs. Sterling J. Ryan

Mrs. Hortense Rosen
Mr. and Mrs. Harold Lewin

Dorothy Rosenbaum
Dr. and Mrs. Peter H. Raven

Mrs. Louis Roth
Mrs. L. A. Bainter

Mrs. Grace Sauer
Mrs. Kenneth M. Schaefer

Mrs. Fayne H. Schafer
Mrs. Gretchen S. Felix

Morris Schlessinger
Washington University Medical Center—Dept. of Microbiology and Immunology

Mr. Kenneth G. Schmutzler
Miss Dolores Fiege
Miss Winnifred Fiege

Gene Schneider
Mr. and Mrs. Bernard Barken

Mr. Charles Edgar Schoene
Mrs. W. J. Frein

J. C. Schultz, Sr.
Mr. Robert E. Schultz, Sr.

Mr. Frank H. Schwaiger
Mr. and Mrs. Frank H. Schwaiger, Jr.

Mrs. Lillian Schwartz
Mrs. Ruth Schwartz

Ms. Emily Simmons Sheldon
Mr. and Mrs. John R. Mykrantz

Mr. Edward Sittner, Sr.
Joan Corwin Family

Dr. John S. Skinner
Mr. and Mrs. Ralph E. Piper

Mr. Robert Smothers
Ms. Marilyn Edmiston

Mrs. Anne Smyser
Mr. and Mrs. Charles C. Love

Dr. Sam Soule
Ms. Priscilla Bell

Doug Sproull's Grandmother
Mr. and Mrs. Brent Stansen

Mr. Emmett Stephens
Ms. Peggy Wolf

Mrs. Lucille Stewart
Dr. and Mrs. David R. Herbold

Mrs. Bonnylyn Stigall
Grace C. Yount

Mrs. Mary G. Stolar
Mr. and Mrs. William R. MacGreevy

Frances Brightwell Stribling
Mr. Edward V. Brightwell
Mr. and Mrs. Henry P. Brightwell, Jr.

Dr. and Mrs. R. C. Sunderman
Miss Mary L. Sunderman

Dr. Victor P. Thompson
Mr. George Bishop

Edward H. and Margaret V. Tienken
Miss Jean G. Brumback

Mrs. Burdie Tonkin
Mr. and Mrs. John D. Brevard

Mr. James Robert Trice
Mr. John D. Phillippe

Mr. Charles L. Ulrich
Mrs. Alberta C. Ulrich

Olga Ekaitis Uram
Administrators Association of the St. Louis Public Schools, Local #44, AFSA

Mr. William Valentine
Mr. and Mrs. Phillip Schreiber

Mr. Corwin Von Brecht
James G. Conzelman
Mr. and Mrs. James G. Conzelman, Jr.
Mr. and Mrs. William O. Cramer

Mr. Harold Vroegindewey
Anonymous

Mrs. Maxine E. Walker
Mrs. Ellen J. Tipsword

Mr. Frank Waters
Mr. and Mrs. John D. Eirten

Mr. Alfred A. Watkins, Jr.
Mrs. Linda G. Eckert

Mrs. Alita Davis Weaver
Mrs. Whitelaw T. Terry, Sr.
Miss Beatrice Thake

Mrs. Marie Weber
Mr. and Mrs. Paul J. Levy

Mr. Claude Webster
Mr. and Mrs. Richard Kautzman
Mr. and Mrs. Daniel F. Wagner

Veronica Wenzel
Dr. and Mrs. David R. Herbold

Miss Judy Wiggins
Miss Deborah Droste
Mr. and Mrs. Louis Droste, Jr.

Mr. Fred Williams
Dr. and Mrs. Peter H. Raven

Mrs. Rita Williams
Mrs. Leslie A. Beitch

Mr. Al Willoughby
Mrs. Paul W. Crow

Mrs. Carol Winkelmeyer
Boxwood Society of the Midwest
Mr. and Mrs. Lindy Mueller
Mrs. Susan M. Reed
Mr. and Mrs. David G. Roach
St. Louis Herb Society

Gerald Wood's Father
Dr. and Mrs. Michael B. Gutwein

Mr. Charles H. Woodcock
Mrs. Kay Morgan

Mr. Robert E. Woods, Sr.
Mrs. Kenneth C. Baker
Mrs. W. K. Bliss
Dr. and Mrs. Stephen F. Bowen, Jr.
Ms. Minerva C. Canavan
Mrs. G. F. Driemeyer
Ms. Pansy D. Fell
Mr. and Mrs. H. Smith McGehee
Mr. and Mrs. James K. Mellow
Mr. and Mrs. James A. Singer
Mr. and Mrs. Hugh C. Webster
Mr. and Mrs. Thomas W. White IV

Gloria Bixby Wright
Alexander Bakewell Family

Mr. Hadley Yates
Mrs. William H. Leyhe, Jr.
Mr. and Mrs. William Leyhe III

Mrs. Charles Zeibig
Mrs. John Macrae

Board of Trustees

Mr. John H. Biggs
President

Mr. Joseph H. Bascom
Rev. Lawrence Biondi, S.J.
Mr. Gerald D. Blatherwick
Mr. Stephen F. Brauer
Mr. William H. T. Bush
Mr. Jules D. Campbell
Dr. William H. Danforth
Mr. Richard K. Gaines
Mr. Robert R. Hermann
Rt. Rev. William A. Jones, Jr.
Mr. David W. Kemper
Mr. Charles F. Knight
Mr. Robert E. Kresko
Mr. William E. Maritz
Mr. James S. McDonnell III
Mr. Lucius B. Morse III
Mrs. Fred A. Oberheide
Mr. William R. Orthwein, Jr.
Mrs. Vernon W. Piper
Mrs. Lucianna Gladney Ross
Dr. Howard A. Schneiderman
The Hon. Vincent C. Schoemehl, Jr.
Mr. Sydney M. Shoenberg, Jr.
Mr. C. C. Johnson Spink
Mrs. Walter G. Stern
Mr. John K. Wallace, Jr.
Mr. O. Sage Wightman III

EMERITUS TRUSTEES
Mr. Howard F. Baer
Mr. Clarence C. Barksdale
Mr. Sam'l C. Davis
Dr. Thomas S. Hall
Mr. Henry Hitchcock
Mrs. Anne L. Lehmann
Mr. A. Timon Primm III
Mr. Joseph F. Ruwitch
Mr. Louis S. Sachs
Mr. Daniel L. Schlafly
Mr. Warren M. Shapleigh
Mr. Robert Brookings Smith
Mr. Tom K. Smith, Jr.
Mrs. Harriet Spoehrer
Mr. Harry E. Wuertenbaecher, Jr.

MEMBERS' BOARD
Mrs. Henry W. Dubinsky
President

Mrs. Rudyard K. Rapp
First vice president

Ms. Elaine A. Alexander
Second vice president

Mrs. Robert P. Elsperman
Secretary

Mr. Frederick H. Atwood III
Treasurer

DIRECTOR
Dr. Peter H. Raven

Sponsored by
Fannie May Candies
Foundation

AUGUST 27 – LABOR DAY

13TH ANNUAL JAPANESE FESTIVAL

The Festival theme this year is "Aki Matsuri" (Fall Festival). Festivals (matsuri) have been described as the gateway to Japanese culture. Matsuri are held in Shinto shrines, and in honor of Aki Matsuri, children carry a *mikoshi* (portable shrine) in the form of a straw rice bag. In addition to solemn, religious rituals, matsuri include joyous celebrations of singing, theatrical performances, dancing and drumming.

■ OPENING DAY
Saturday, August 27
Festivities begin with a traditional procession featuring colorful costumes and the sound of drums.

■ WEEKDAYS
Activities include craft demonstrations, a Japanese film festival, a fashion show and informal modelling, and the traditional candlelight walks on Thursday, Friday and weekend evenings.

■ THURSDAY
September 1
Highlights the Japanese Garden, Seiwa-En, with special tours, including a rare opportunity to visit Teahouse Island. A day-long seminar on Japanese gardening will require reservations and a fee.

■ FRIDAY
September 2
Japanese Children's Day returns with performances by St. Louis Taiko drummers, classical dance, magic, children's games and more.

■ WEEKENDS
Martial arts, taiko drums, koto music, candlelight walks and much more!

Festival Hotline opens Monday, August 22.
Call 577-5198 for details.

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
P.O. Box 299
Saint Louis, Missouri 63166

SECOND CLASS
POSTAGE
PAID
AT ST. LOUIS, MO

Missouri Botanical Garden Bulletin

QK1
.M593
c.2

SEPTEMBER /
OCTOBER
1988

VOLUME LXXVI
NUMBER FIVE

Inside This Issue

4 **Home Gardening**
A new *Bulletin* feature makes its debut, with suggestions for fall planting.

6 **3.5 Millionth Specimen**
The herbarium celebrates its past and its future.

7 **Gardening at the Garden**
A species threatened with extinction is studied.

8 **Ask the Answer Service**
Time to make preparations for winter.

9 **Report from Madagascar**
Research yields a wealth of intriguing new discoveries and collaborations.

12 **Calendar of Events**
Autumn brings an exciting schedule of Members' Days, displays and special events.

14 **From the Membership Office**
Travel, events, and news of the neighborhood.

18 **For Younger Members**
Tree identification and leaf collections are activities for fall.

21 **Tributes**
Friends and family are remembered with a gift to the Garden.

On the cover: *Miscanthus sinensis* growing near the Linnean House.
—Photo by Pat Watson

© 1988, Missouri Botanical Garden.

The BULLETIN (ISSN 0026-6507) is published bi-monthly by the Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, MO 63110. Second class postage paid at St. Louis, MO. Subscription price $12.00 per year. $15.00 foreign.

The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $35 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Susan Wooleyhan, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

As Fall Approaches

Festivals in Japan are considered the gateway to Japanese culture. "Aki Matsuri," or fall festival, is the theme of our 13th annual Japanese celebration from August 27 through Labor Day. Performances by Japanese artists should be spectacular this year and feature Japanese paper making, Taiko drums, Koto music and Shi Shi Mai, the traditional festival dragon dance. Last year thousands of Garden Members enjoyed the festival and there is good reason to return this year! The Fannie May Candies Foundation is the festival sponsor for the third year.

The Japanese Festival also signals the start of a new season. This fall you may wish to highlight special dates of upcoming Garden events on your calendar.

On September 23, a Members' sculpture walk will take you by each Garden sculpture, offering interesting facts about each piece of art. During the walk you can enjoy the majestic beauty of the bronze sculptures by Carl Milles which extend gracefully above the lily pools facing Flora Gate.

Roberto Burle Marx, a famous Brazilian landscape architect, gardener and artist will share his experiences after the sculpture walk. Called a "one-man extravaganza," Mr. Marx, an exceptionally talented man, is known worldwide for his garden designs, artwork and his unflinching commitment to the preservation of our disappearing tropical rainforests. (See the back cover for details.)

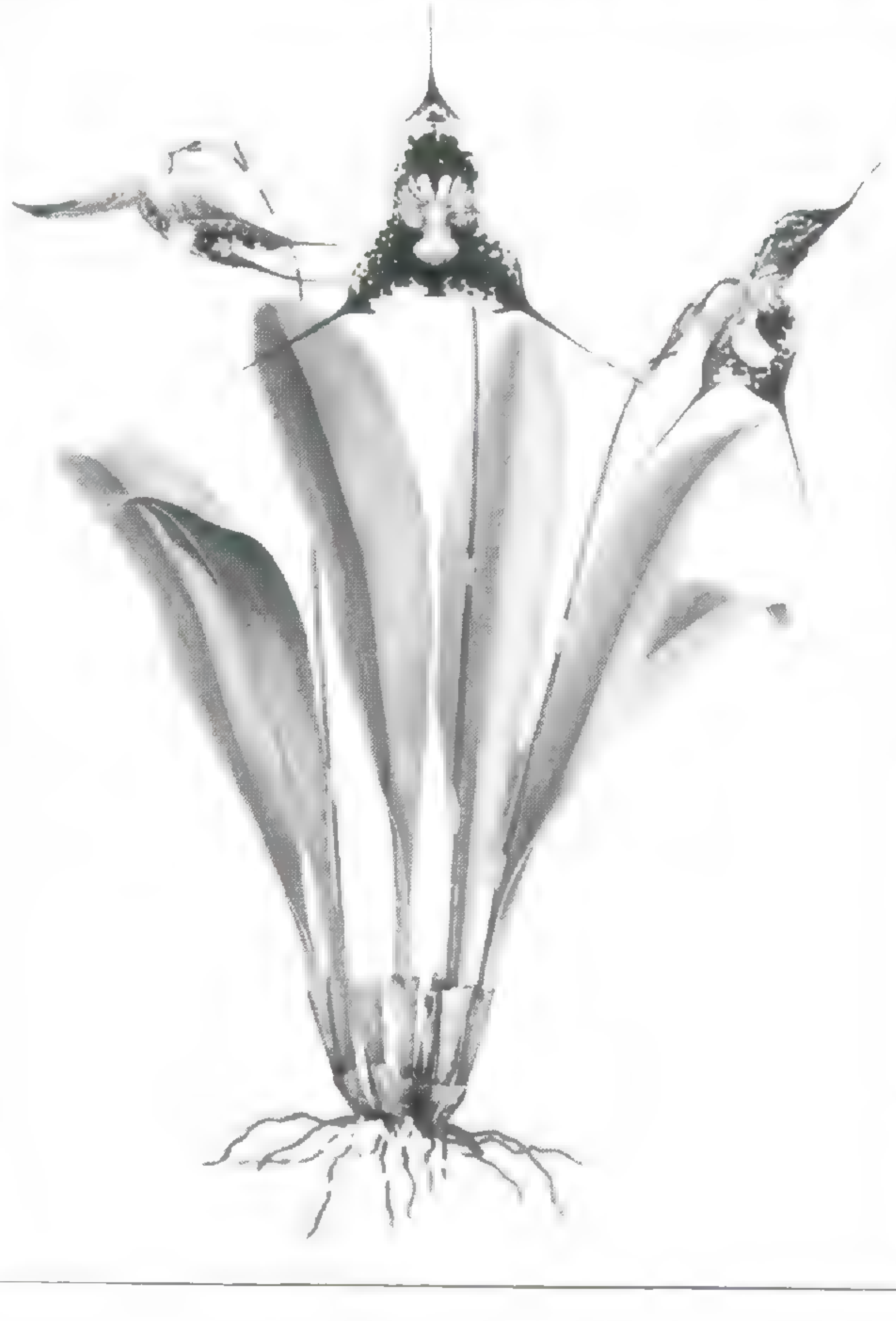
October promises another full month of activities plus a special Members' family event. A picnic and treasure hunt in the Garden will make this family day exciting for children and their parents.

Members continue to join in support of the Campaign for the Garden and the Board of Trustees and campaign steering committee wish to thank each member again for his assistance. The Kresge Foundation challenge grant of $650,000 is encouraging new contributions, an exciting and beneficial result of any capital campaign.

Please join us at the Garden as we approach another exciting season.

Peter H. Raven

Garden Publishes Major Work On Orchids



Thesaurus Dracularum, an important new monograph on an intriguing group of orchids, has been published by the Garden's department of scientific publications. It was written in English by Garden research associate Carlyle A. Luer with Rodrigo Escobar, and includes a German translation by Fritz Hammer. The large format (11½ inches by 16½ inches) features 15 full color plates. The watercolor paintings of these spectacular flowers were done from life by Swedish artist Stig Dalström.

The text gives a detailed description of each species of *Dracula* included. *Thesaurus Dracularum* is available in the Garden Gate Shop, or by mail order from Department Eleven, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299. Price is $40; please make checks payable to Missouri Botanical Garden.

The CAMPAIGN for the Garden

First Year Celebration

(Left to right): Phyllis Maritz, William Orthwein, Jr., Laura Orthwein, William Maritz and Peter H. Raven.

(Left to right): John K. Wallace, Jr., Harriet Spoehrer, John H. Biggs and Robert E. Kresko.

Clarence C. Barksdale (left) and Tom K. Smith, Jr.

UPDATE: As of June 30, 1988 the $16 million Campaign for the Garden had raised $12,449,154 in gifts and pledges. We thank those donors whose generosity helped us reach this point in our fundraising progress.

ON May 18, 1987 the Board of Trustees announced to the St. Louis community the beginning of the Campaign for the Garden's public fundraising phase. This past June 27, Campaign staff, volunteers, and donors celebrated the first year of public effort with a party held at Flora Gate. In that one-year time period, the drive had raised almost $5.5 million in gifts, bringing the total to almost $12.5 million.

There was much to celebrate—many generous gifts of dollars and time, as well as the successful completion of three new production greenhouse ranges, the beginning of the Climatron's complete restoration, and improvements to the Climatron lily pools area, including the installation of seven newly cast pieces by the late Swedish sculptor, Carl Milles.

Dr. Peter Raven, in his opening remarks, noted the Garden's recent achievements and how these successes have in turn increased opportunities for growth and development. He stated, "Our success has been made possible because we have an outstanding staff, a committed base of donors, and an extraordinary Board of Trustees. No one exemplifies this Board leadership more than Bob Kresko, who has carried out the difficult job of running our capital campaign with skill and a fine sense of style."

John Wallace, a member of the Board of Trustees and the Chairman of the Campaign's Special Gifts Committee, next spoke about the drive's future: "We face a lot of work to bring the Campaign to a proper close. As we all know, the last part of any effort is often the greatest challenge. There are still individuals, corporations, and foundations that have not yet decided on their commitments. We want to give them an opportunity to join the Campaign and make special contributions to this most singular institution. . . . The Campaign has been a revelation to those of us chairing the committees because it has given us a chance to meet and talk with people from all parts of the metropolitan area who are devoted to this Garden. We have found that when we get a chance to tell the Garden's story, there is a strong and generous response."

MISSOURI BOTANICAL
SEP 7 1988
GARDEN LIBRARY

WOODCOCK TRIBUTES BENEFIT CAMPAIGN

Lyle and Aileen Woodcock, two long-time Garden members, recently celebrated their 50th wedding anniversary and kindly asked co-celebrants to make any "gifts" in the form of donations to the Campaign for the Garden. In the Woodcocks' honor, their friends and family contributed more than $9,000 to the drive. (Gifts in honor of Mr. and Mrs. Woodcock are listed on page 21.) We thank the Woodcocks for their thoughtfulness and we thank their many well-wishers for their generosity.

H·O·M·E GARDENING

FALL PLANTING

by Barbara Ellis

This issue of the Bulletin *introduces Barbara Ellis, a former editor of* American Horticulturist *magazine and other publications of the American Horticultural Society. Barbara's freelance articles on gardening have appeared in the* World Book Year Book, Dossier *and* Family Circle, *and she has worked as an editor for the Center for Plant Conservation and Time-Life Books.—Editor*

AS the long, hot summer of 1988 draws to a close, it is time to begin putting the garden to bed for the winter. Fall is an excellent time to review the past season and to plan next season's display. It's also a fine time to plant many hardy perennials, shrubs and trees.

One of the reasons autumn is such a good time to plant is that crisp days and cool nights provide perfect conditions for plants to adapt to their new homes. They have ample time to settle in and begin root growth before having to endure the hot summer sun.

As a general rule, perennials that bloom in spring can be planted in fall; those that bloom in fall are best planted in spring. Tulips, daffodils, crocuses and other "small bulbs" have long been planted in autumn, but don't overlook daylilies, peonies, hostas and other hardy, spring-blooming perennials as prospects for fall planting.

Fall is also an excellent time for dividing hardy perennials, such as hostas and daylilies, that have become overcrowded. Roots can be separated with a sharp spade or pried apart with two spading forks. Be sure to replant the divisions as soon as possible. Divided plants will produce few blooms and little growth next spring but will flourish the following year. Deep-rooted perennials such as peonies, blue false indigo *(Baptisia australis)*, butterfly weed *(Asclepias tuberosa)*, and gas plant *(Dictamnus albus)* resent such disturbance; do not divide them. If you want new plants of these species, purchase them from a reputable nursery. (For more on growing perennials, see "Gardening With Perennials," page 17 of the March/April 1988 *Bulletin*.)

Most shrubs and trees can be planted in fall. In fact, conifers are best moved this time of year. However, the following are best planted in early spring: birch, cotoneaster, dogwood, hawthorn, magnolia, red maple and sweet gum. Most broad-leaved evergreens also are best planted in spring.

SMALL TREES FOR FALL DISPLAY

Take time this fall to stroll through the Garden and admire specimens in the collection that are especially showy this time of year. Which plants would add to your own fall display? Many gardeners don't have room for another large tree, but there are outstanding small trees perfect for a patio or a corner of the garden.

The following small trees all provide fruit or spectacular fall foliage. Some have attractive bark or spring flowers as well. Best of all, these are hardy plants that will withstand our hot dry midwestern summers without a fuss. Unless otherwise noted, all will tolerate wind and drought and are relatively free of diseases and insects. They can be pruned to keep them smaller than the mature heights listed.

The maples and hawthorns listed below are probably best planted in spring. (Locations of specimens growing at the Garden are noted.)

◆ ***Acer buergerianum*** (Japanese Garden, English Woodland Garden). Trident maple reaches a height of 35 to 45 feet. It has striking, brilliant orange and red fall foliage, and attractive exfoliating bark. Trident maple will grow in clay or loam soil and prefers a pH of 6.5 to 7. In addition to wind and drought, it will withstand salt, air pollution and compacted soil.

◆ ***Acer campestre*** (Knolls, Historic Garden). Commonly called hedge maple or field maple, this species provides yellow or yellow-green foliage late in the fall. A densely branched, 35-foot tree, it often has limbs all the way to the ground. As its name suggests, it can be pruned to make a fine hedge. Hedge maple is an excellent choice for dry, alkaline soils and tolerates air pollution and compacted soil. It will grow in light shade or full sun.

◆ ***Acer ginnala*** (Japanese Garden, Azalea-Rhododendron Garden). Amur maple provides brilliant scarlet fall color if planted in full sun. Unlike many maples, however, it also tolerates part shade. A multi-trunked tree with a dense branching habit and gray-brown bark, this species makes an attractive specimen or patio tree. An added bonus are the panicles of fragrant, yellowish white spring flowers. Although it will grow in a wide range of soil types, as well as wind and drought, amur maple prefers moist, well-drained soil.

◆ ***Crataegus viridis*** 'Winter King'. Although there are a number of trouble-free hawthorn cultivars available today, 'Winter King' is especially good for the home. Plants reach 30 to 40 feet and their orange-red fruits are showy during the fall and winter months. Fall foliage is yellow to scarlet or purple. Although this cultivar is susceptible to several types of insects, including aphids, caterpillars and leaf miners, it is very adaptable to urban conditions. Its thorns may deter some gardeners from planting it. 'Winter King' requires sun, and can be used as a specimen, windbreak or hedge.

◆ ***Koelreuteria paniculata.*** Golden-rain tree is a 30- to 40-foot tree that has a round-headed shape and bears pinnate leaves that turn yellow in fall. It is a summer-blooming tree that bears masses of yellow flowers followed by panicles of 1½ to 2-inch, lantern-shaped seed pods that turn from green to brown. The clusters of seed pods are considered ornamental by some gardeners; others don't like them. They are valued for their use in dried arrangements.

◆ ***Malus*** species. Crab apples are perhaps the best-known and most often planted of small trees, but many gardeners are not aware that some cultivars are more disease-resistant than others. Cultivars with some or complete resistance to cedar-apple rust, fire blight, scab and powdery mildew include: 'Donald Wyman' (Samuels Bulb Garden), which reaches approximately 15 to 20 feet and bears white flowers from pink buds; 'Adams' (Historic Garden, Knolls), 20 to 25 feet, with deep pink flowers; and 'Red Jade' (Japanese Garden), with a weeping habit and white blooms. Crab apples prefer sun and well-drained soil but are hardy enough for compacted soil and drought. Yellow fall foliage is accented by red fruit.

LAWNS: REPAIRING BALD SPOTS

Because of the cool temperatures and increased rainfall, lawn grasses have a natural growth surge in the fall. This is an excellent time for gardeners to repair ailing, summer-damaged lawns.

To repair bald spots, first remove all of the dead grass and any dying plants from around the edge. Spread two to three inches of peat moss over the spot, and add a very small amount of a high-phosphorus fertilizer such as 5-10-5 to promote good root development. (You can also use an organic fertilizer such as well-rotted manure, but phosphorus should still be added.) Dig the peat and the fertilizer into the soil to a depth of about six inches. Smooth the spot with a rake and firm the soil with the sole of your shoe until it is level with the surrounding lawn.

Sprinkle seed over the prepared ground, rake lightly, and then keep the soil moist until the grass germinates. A light covering of weed-free straw will help retain moisture and protect the seedlings. Sod is a fine alternative to seed. Strips of sod can be cut apart and used as plugs to fill bare spots. As with any transplant, keep the sod moist just until it begins to grow.

This method can be used to renovate lawns with extensive damage. Although time-consuming, in many cases it is less work than digging up the entire lawn and starting from scratch.

SEASONAL REMINDERS

◆ **Bank Your Leaves**. Keep leaves raked, but don't just bag them and throw them away. Add them to the compost pile and "bank" the valuable organic material they provide for future years. Composted leaves and other disease-, insect- and weed-free garden refuse make ideal soil amendments, vital for improving compacted and clay soils. Best of all, compost is free! Oak leaves are especially valuable because they are acid and help lower the pH of alkaline soils.

◆ **Edible Landscapes.** It's not too late to start a second crop of cool weather crops like leaf lettuce or spinach. Either start seed in flats and transplant to the garden or seed directly into a prepared seed bed. Thin when plants are about two inches tall and begin harvesting as soon as leaves are large enough to eat. (Thinned seedlings are delicious in salads.) If you don't have a vegetable garden, try growing either of these crops as an edging in a bed or border.

◆ **Poinsettia Pointer.** Indoor gardeners planning to force their poinsettias into bloom for the holidays should mark September 23 on their calendars. From that date onward, plants require 14 or 15 hours of complete darkness and from 9 to 10 hours of sunlight daily until color is showing on the bracts (the petal-like leaves surrounding the center). Night temperatures must remain at 60-65° F. To guarantee total darkness, put plants in a closet, under a box or in a room that is *never* used after dark. The best way to ensure success is to set up a schedule of covering and uncovering the plants and never vary from it.

FALL COURSES

A number of courses offered at the Garden and Arboretum this fall will examine the *Home Gardening* topics at left in greater detail. For more information and a complete listing of all courses offered, consult the *1988 Fall Courses and Lectures* brochure recently mailed to all Members, or call 577-5140.

SEPTEMBER

6	Hostas and Companion Plants for the Shade
12	Home Lawn Care *(5 sessions)*
13	Little Known Perennial Treasures
15	Growing Iris *(2 sessions)*
19	Gardening Techniques *(6 sessions)*
24, 28	Trees of Shaw Arboretum

OCTOBER

5	Native Missouri Tree Walk
6	Perennial Garden Design *(3 sessions)*
15	Planting for Success Composting
29	Bulb Planting and Care

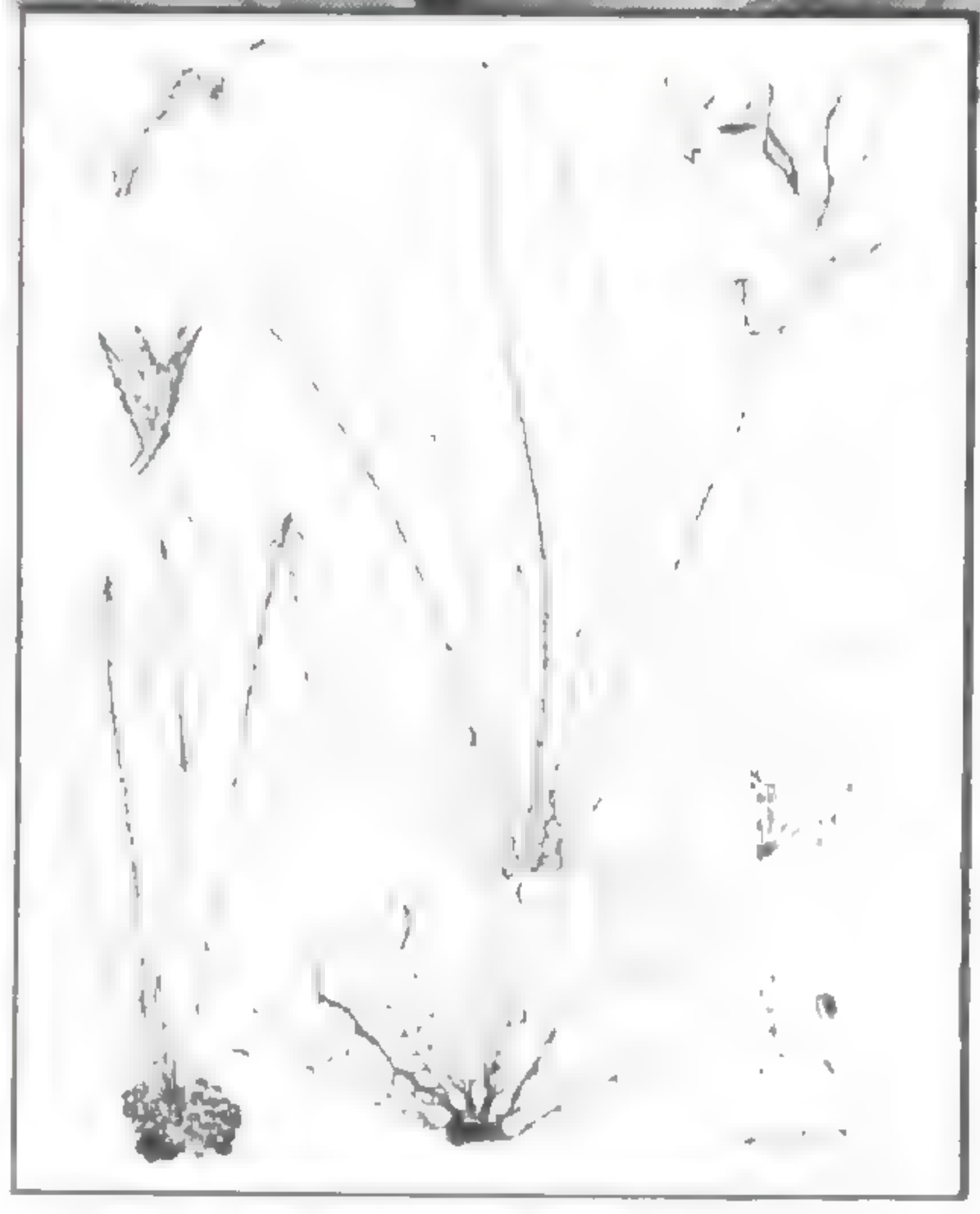
NOVEMBER

9	The Everblooming Garden *(2 sessions)*

DECEMBER

6	Winter Botany *(2 sessions)*

(Left to right): Jon Ricketson, Collections Manager; George E. Schatz, assistant curator; Enrique Forero, director of research; Porter P. Lowry II, assistant curator; Peter H. Raven, director; Nancy R. Morin, curator of the herbarium; and John H. Biggs, president of the Board of Trustees look on as Gigi Hill, plant mounter, prepares the specimen of Vitex masoalensis *G. E. Schatz (drawing at left).*



Drawing by John Myers

Herbarium Celebrates 3.5 Millionth Specimen

RESEARCH NEWS

On July 8, 1988 at a ceremony in the library of the John S. Lehmann Building attended by Trustees, friends and staff, the Garden officially mounted the 3.5 millionth specimen to be added to the herbarium's collection. It is the holotype of Vitex masoalensis *G. E. Schatz. (For a description of the discovery of this new species, see "Report from Madagascar" on page 9.) The following remarks were prepared by Dr. Nancy Morin, curator of the herbarium. —Editor*

The mounting of the 3.5 millionth specimen in the Garden's herbarium marks a milestone in the herbarium's long history of significant acquisitions. Begun in 1859 when the Garden opened, the herbarium first contained the private collection of Johan Jakob Bernhardi, who was born in Erfurt, Germany, in 1774 and died there in 1850. This archive contained nearly 60,000 plant specimens collected by many different people from around the world. It was purchased for Henry Shaw by George Engelmann (Shaw's botanical advisor). Engelmann's personal herbarium of 98,000 plants was donated to the Garden after his death in 1884. This was a very significant addition, because it contained many of the new plants discovered in North America, especially the West.

After Shaw's death, under the direction of William Trelease and the Board of Trustees, the herbarium continued to grow, largely through acquisitions of private herbaria. Many of these were purchases, and included the herbaria of George Thurber, John Ball, J. H. Redfield, J. F. Joor, Gustav Jermy, A. W. Chapman, C. G. Broadhead, and Sadie Price. Most of their plants were collected in North America.

By 1891 the Engelmann and Bernhardi herbaria were mounted and put into order, according to the annual report of that year. Stamping and numbering of the specimens did not start until 1913, when there were actually 635,841 specimens in the herbarium. About that time many collections were made by Ernest Palmer as part of a plan to write a flora of the Southwestern United States. Expeditions to Panama began in 1922, the beginning of the Garden's long involvement in studying the flora of that country.

The one millionth specimen was mounted sometime in 1931. By 1970 the two millionth specimen was mounted, and the three millionth was mounted in 1983.

The development of the herbarium has taken on a new and very important quality during the last decade, through the efforts of the research staff under the direction of Marshall Crosby and, more recently, Enrique Forero. During this time we have continued the tradition of numerous and intensive field expeditions, and we have used the strategy of stationing Garden staff in other countries to greatest effect. Our curators in the field have established strong contact with local botanists, resulting in the development of many collaborative projects. The work done in Madagascar, home of the 3.5 millionth specimen *Vitex masoalensis*, is one of our best examples of how well this approach works. The opportunities now available to us through the efforts of Pete Lowry, George Schatz and others in the Madagascar program are particularly exciting.

The work of each individual plant mounter over the last 100 years has been to protect our specimens. This is the priceless documentation of the biological diversity of the plants that inhabit our planet. Preservation makes specimens easily available for studies of all sorts, from verifying the identity of a plant eaten by a child to determine if it is poisonous, to linking a fossil fragment to its living relative, to locating populations to be sampled in order to compare their genetic makeup.

It is through our joint efforts—curators collecting in the field, staff efficiently processing the plants, mounters and filers incorporating the specimens into the mounted collection—that we have become one of the major botanical research resources in the world for botanists studying neotropical plants. The Garden now has the finest collection of African plants in the United States, and its collection is among the finest in the world.

Gardening at the Garden

A Species That Nearly Disappeared

Three activities that have been taking place over the last few years converged this summer: Professor Robert Kral at Vanderbilt University in Nashville prepared a government report on rare southern plants; Florida botanists Gary Knight and Angus Gholson, Jr. studied the flora of the Florida panhandle; and I investigated the Strychnine Family of the southeastern U.S. From these diverse standpoints we all spotted the same Florida-panhandle species, *Spigelia gentianoides*, threatening to go extinct with virtually nobody watching.

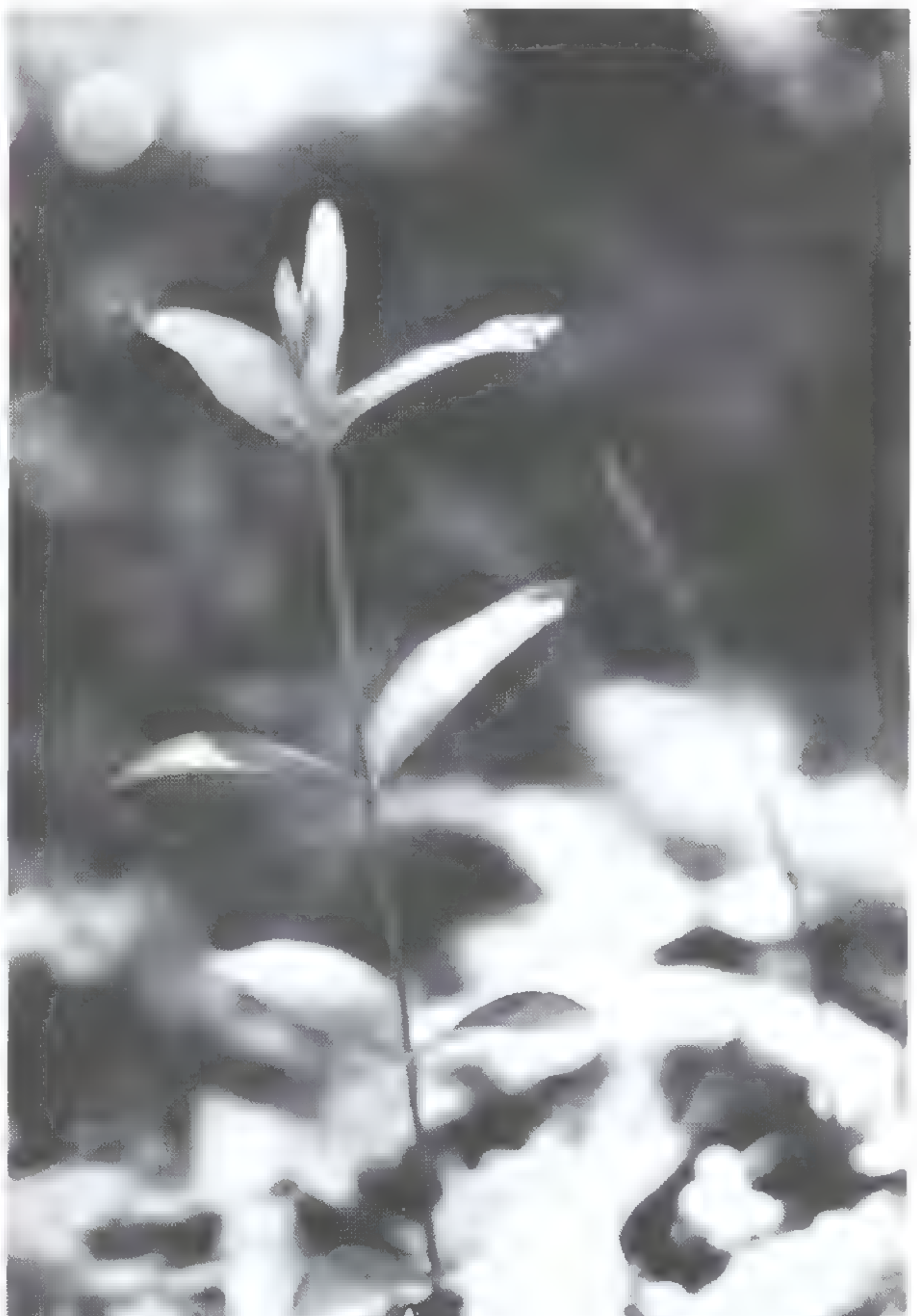
As a member of the Strychnine Family (Loganiaceae), *Spigelia gentianoides* is in the company of about 500 mostly tropical species distributed around the globe. Familiar examples in the Garden include Carolina jessamine *(Gelsemium sempervirens)* and butterfly bush (species of *Buddleja*). In addition to its beauty, this is a family of drugs and poisons, among them the rat poison strychnine, the surgical muscle-relaxant alcuronium, and ingredients in the poisons known as curares that lend the zip to deadly darts and arrows. In China, one species has been used for murders, executions, and suicides. Such medically useful and pharmacologically interesting derivatives add incentive to conserving and studying members of the Strychnine Family.

Among the largest genera in the Loganiaceae is *Spigelia*, with some 50 species in the New World, primarily the tropics. True to its family, *Spigelia* is laden with drugs and poisons—one South American species is even dangerous to touch. And spigelias turn up in gardens—the brilliant red *Spigelia splendens* is cultivated in the tropics, and the likewise dazzling pinkroot *(Spigelia marilandica)* is familiar in Missouri gardens and woods alike. Pinkroot has trumpet-shaped hummingbird-pollinated flowers scarlet on the outside and bright yellow within, and it has a history of exploitation as a worm remedy, which reduced wild populations severely, and which probably killed more patients than it cured. (See pinkroot in the Woodland Garden.)

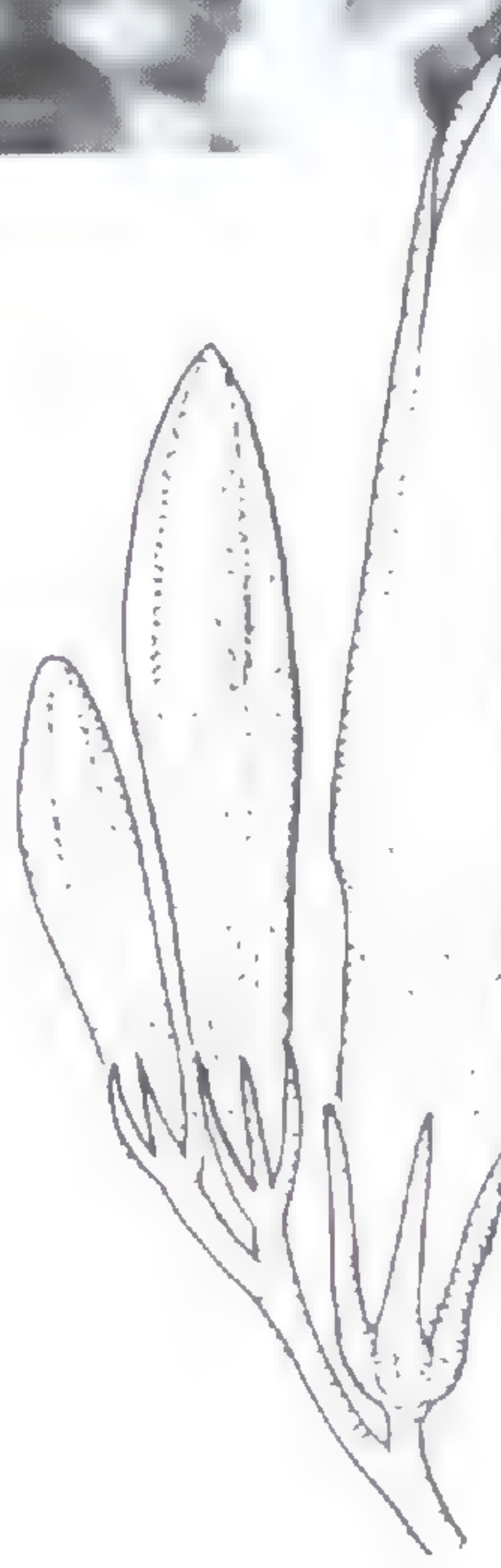
In contrast with its showoff relative pinkroot, *Spigelia gentianoides* (with no common name) hides shyly in shady Florida pine-oak woods and forms modest white to very light pink tubular flowers not known to ever open, a little like those of the bottle gentians to which it owes its Latin name. If this makes you wonder about how the flowers are pollinated, they do not stay *completely* sealed—five slits open between the petals, and my guess is that a moth effects pollination when it inserts its proboscis into the slits probing for nectar. It is not confirmed that the flowers never open completely at some unknown time, and further study may yield various such surprises.

In May of this year, Professor Kral and I searched near Marianna, Florida for *Spigelia gentianoides*, visiting previously recorded sites and examining other spots with seemingly suitable habitat. Such spots were scarce, since the area is being cleared rapidly for various purposes. After much hunting, the payoff was relocating one tiny patch of about 30 plants at the edge of a highly disturbed area along a road. The plants were stunted, probably thanks to the drought of 1988 and/or from disturbance to the woods. The population was about five times larger the last time it was visited, about 12 years ago.

Fearing that we had possibly seen the last remnant of *Spigelia gentianoides*, we continued our investigation, which led to botanist Angus Gholson, a resident of *Spigelia gentianoides* country and authority on the flora there. He was aware of a second population of the *Spigelia* discovered by Florida State University student Gary Knight in 1985. Upon communicating with Dr. Kral and with me, Mr. Gholson began a series of visits to the second patch watching for seed formation with the hope of helping to bring the species into protective cultivation. Attempting this will be part of the Garden's participation in the Center for Plant Conservation project, an effort aimed at establishing backup populations of rare species in botanical institutions. At present, a small number of thirsty plants are beginning to ripen a few small fruits. If seeds form, some will be collected and pampered in the Garden's greenhouses. If they grow and yield another generation, we will have a source of seeds for long-term seed banking. If the drought foils us this year, there is always next year.



Spigelia gentianoides



Drawing by John Myers

Whatever the final outcome, *Spigelia gentianoides* will not disappear unknown, and I do not believe that it will disappear at all now. The species serves as an example of the encouraging cooperation and interest that emerges, on each occasion by surprise and from unexpected angles, when attention is directed to a species in serious trouble.

—George Rogers, Ph.D.

Ask the Answer Service

Garlic, Lilies and Squash

Do you have a plant question? Call the Horticultural Answer Service, Monday through Saturday, 9 a.m. to noon, at ***577-5143.***

Q. Last spring I planted some garlic, hoping to grow big bulbs. The results were disappointing to say the least. What is the secret to growing large garlic?

A. If there is one secret to success with garlic, it is fall planting. Garlic planted in the autumn often will produce bulbs that are twice as large as those planted in spring. Garlic must have good drainage, so avoid sites where water may collect during winter. Work in compost prior to planting. Space the individual cloves about six inches apart at a depth of one to two inches. Late September or October is the best time for planting. This allows the cloves plenty of time to sprout, root, and produce several inches of top growth before frost sets in. It's a good idea to mulch your garlic with two or three inches of compost before the ground freezes. This will minimize frost damage and heaving. When the sprouts resume growth in the spring, side dress with some 5-10-5 or 10-10-10 fertilizer. Keep your garlic well watered during the growing season. If stressed from lack of water, bulb size will be reduced. The long days of May and June signal the bulbs to enlarge. Remove any flower stalks as they appear. When the leaves start to yellow and wither in late July or August, the garlic is ready for harvest.

Q. I grew pumpkins and Butternut winter squash for the first time this year. How can I tell when they are ready for harvest?

A. Pumpkins are ready for harvest when they are completely orange and their skin is hard. Winter squash are ready when their colors have darkened and you can't dent their skin with your thumbnail. Both should be picked before frost. When harvesting pumpkins and winter squash, carefully cut them off the vine, leaving an inch or two of stem intact. If the stem is broken off from the fruit, storage time is greatly reduced.

Q. When should I dig my sweet potatoes?

A. Dig your sweets just before frost in the fall. Take extra care not to bruise or damage the sweet potatoes or they will spoil rapidly. Ideal curing conditions (85 degrees and 85 percent humidity) rarely exist in St. Louis at digging time, so plan on sharing your harvest bounty—or else freezing a lot of sweet potato pie.

Q. My house plants have been enjoying themselves outdoors all summer. Just when should they be brought back inside?

A. Plan on returning your plants to their winter quarters by mid-September or about the time when conditions inside and outside the home are the same. It is most important that plants have about a month to adjust to indoor conditions prior to the start of the heating season. Prune back any plants that have grown too large and trim roots growing out the bottom holes. Inspect the foliage and apply any necessary sprays. A thorough drenching of the soil with insecticidal soap will take care of most ant, pillbug and slug problems.

Q. My amaryllis still has lots of green leaves and is growing well. What can I do to get it to bloom again?

A. First, you must let your amaryllis (*Hippeastrum*) dry off, so stop watering and fertilizing. It may take several weeks, but eventually the leaves will turn yellow, and then brown. It's important not to cut the leaves off before they have withered. Let the bulb rest for two or three months before growing again. At that time, wash away as much old soil as you can without disturbing the roots. Replace with fresh, standard potting soil and water thoroughly. Don't water again until growth resumes, and then gradually increase watering frequency. Amaryllis should bloom about a month after new growth begins.

Q. I visited my daughter in California recently and she gave me a Madonna lily to take home. I planted it in the ground, and now it has started to grow. Is this normal?

A. Yes. It's normal for Madonna lily (*Lilium candidum*) to grow leaves in the fall. In fact, early September is a good time for planting and transplanting Madonna lilies. When replanting, choose a well-drained site enriched with compost or leaf mold and a dusting of lime. Set the bulbs so they are covered with only an inch or two of soil. Blossoms won't appear until June.

Q. I have several shrubs in my yard that look very untidy. Is it o.k. to prune now?

A. If these are spring-flowering shrubs, any pruning now will remove next year's flowering buds, since they have already formed. Not only will pruning now sacrifice bloom, but it may also stimulate new growth easily damaged by winter cold. The proper time to prune these shrubs is after they have finished blooming next spring.

Summer-flowering shrubs may be pruned in late winter or early spring while dormant. Well-kept shrubs or formal hedges that have developed a few scraggly or upright shoots can have these carefully removed now if necessary to tidy their appearance. However, heavy pruning should be delayed until the proper time.

TIMELY TIPS

- Keep leaves raked off the lawn as heavy accumulations may smother grass.
- Perennials that have finished flowering may be cut back to stand about two or three inches tall. Top dress with superphosphate and compost and lightly cultivate.
- Keeping flowering dogwood well supplied with water now while flower buds are forming will pay dividends during next spring's bloom.
- Remove and destroy spent iris foliage after frost to eliminate overwintering iris borers' eggs.
- Continue spraying roses to control black spot fungus until foliage is killed by frost.
- Stop all pruning of roses now to encourage plants to harden off before frost. Remove only the petals from spent blossoms and allow the hips to remain.
- Cut off all seed heads before adding garden weeds to the compost pile. You'll be rewarded with less weeding next year.

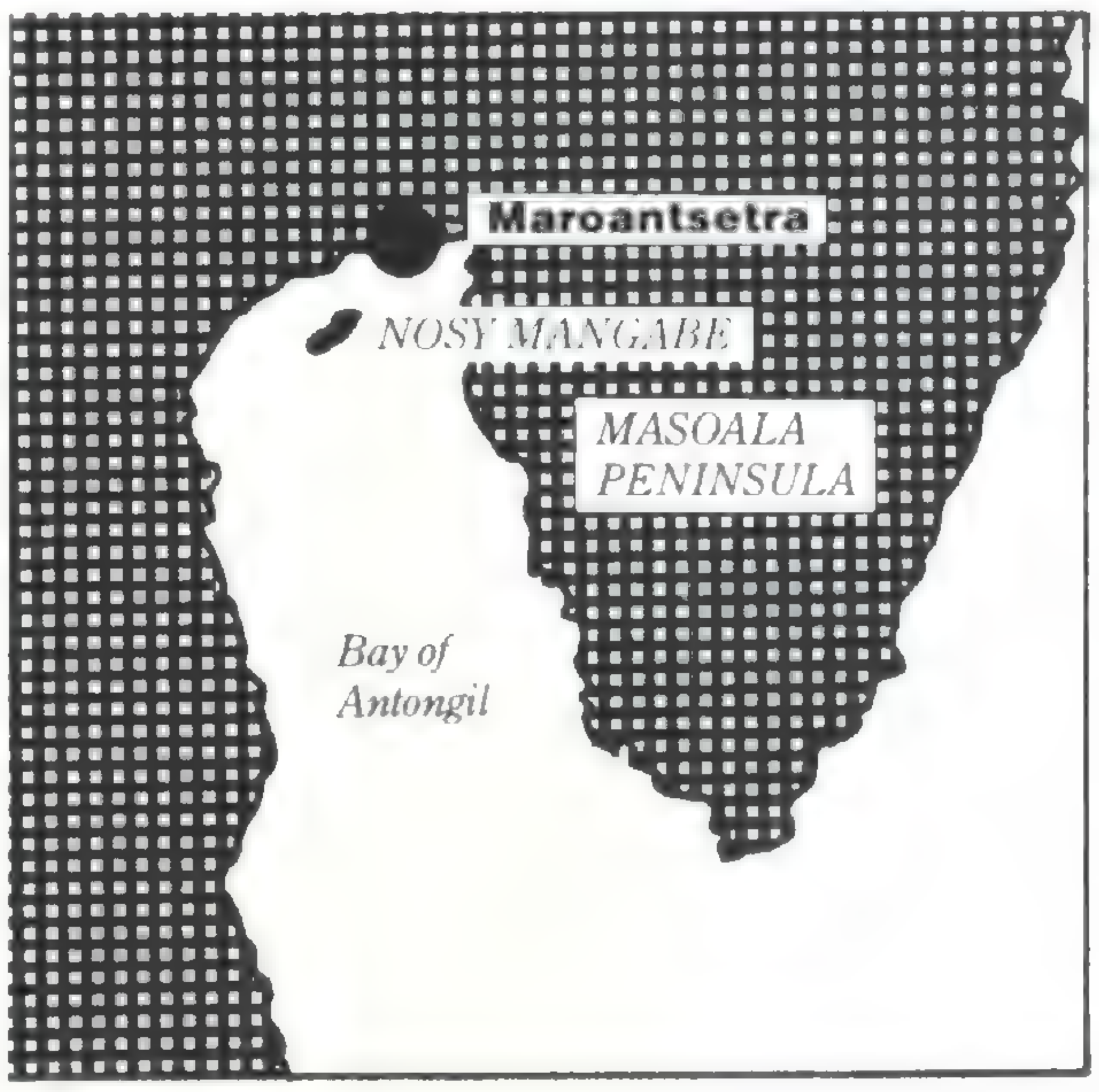
—Chip Tynan, The Answer Service

AFRICA
Indian Ocean
MADAGASCAR

Nosy Mangabe, in the Bay of Antongil

REPORT FROM MADAGASCAR

THE MASOALA PENINSULA



by George E. Schatz

THERE IS A SAYING on the Masoala Peninsula in northeastern Madagascar that "there is the rainy season, and then there is the season when it rains". As incongruous as it may seem, an umbrella is an indispensable piece of field equipment when walking through the tropical rainforest. The key to a successful expedition lies ultimately in keeping at least one pair of pants and a shirt dry at all times, and at all cost. One quickly learns the utter futility of starting the day in anything other than the previous day's wet clothes. Each day, however, regardless of how much it rains (and it will rain!), one is nearly certain of making some fantastic new discovery. High rainfall and rugged terrain have effectively isolated the Masoala Peninsula, leaving its forests, which rise steeply from pristine beaches to over 1000 meters in elevation, intact and virtually unexplored.

The Garden's Madagascar Research Program, supported by the W. Alton Jones Foundation and the National Geographic Society, currently focuses on this diverse region around the Bay of Antongil, which may well contain one-half of all the plant species in Madagascar. Along with our Malagasy colleagues from the Centre National de Recherches de Tsimbazaza (CNRT), we travel by plane to Maroantsetra, a prosperous, sleepy town at the head of the Bay of Antongil. This area is the center of a rich rice-growing delta, as well as a major market for coffee, cloves and vanilla. Other than the paved road to the airport and a sandy track leading south along the coast, now cut off by fallen bridges and ferries washed out to sea during the most recent cyclone season, there are no roads. All travel is by boat. The Garden's new inflatable ten-person Zodiac and 40-HP motor were christened in February during a visit by a team of botanists from Kew Gardens, including the palm specialist John Dransfield. It was John's second trip to Masoala; during his first visit, he had discovered seven new species of palms, two of which represented new genera.

During my first trip to Masoala in April of 1987, our guides Gerard and Gilbert led me to a specimen of one of those new genera of palms: *Voanioala*, literally "coconut of the forest". It was a six-hour walk inland from the tiny village of Antalavia, two hours by boat from Maroantsetra. The arduous hike follows and repeatedly crosses the Antalavia River, a torrent of rushing water and massive boulders covered with *Angraecum* orchids and lined with the rheophytic palm *Vonitra*. At the source of the river, a flat swampy area at 450 meters elevation, we found *Voanioala* in fruit just as a family of rare, endemic helmet birds *(Euryceros prevostii)* flew overhead.

As we were leaving to begin our descent back to the coast, I spotted a tree with white flowers borne all along its trunk. I realized at once it was a species of *Vitex* (Verbenaceae). Unbranched, and seven to eight meters tall, the tree was crowned only by two huge leaves, each nearly a meter in length. Guy Suzon, a professor at the University in Antananarivo, remarked in absolute incredulity, "that has to be new!". Subsequent examination of the collections at the museum in Paris confirmed our suspicion, and I have since named the new species *Vitex masoalensis*. (See "Herbarium Celebrates 3.5 Millionth Specimen," page 6.)

I had hoped to revisit the site in February with Dransfield and the team from Kew, but after three continuous days of rain the Antalavia River became impassable. Instead, we explored a ridge to the north, where we encountered a spectacular large purple-flowered Bignoniaceae, which Garden specialist Alwyn Gentry

continued on next page

News From the Library

Archives Receives Papers of Bakewell and Moore

Harriet Hall Moore, c. 1914

The Garden's archives was the recipient in March of a large collection of office files and architectural drawings of Harriet Rodes Bakewell, a prominent St. Louis landscape architect. This gift by Mrs. Bakewell's daughter, Margaret Rodes White, also includes a small collection of personal papers of George T. Moore, Mrs. Bakewell's father and Mrs. White's grandfather. Dr. Moore was a distinguished botanist and the Garden's director from 1912 to 1953.

Harriet Bakewell, who literally grew up at the Garden, designed the Anne L. Lehmann Rose Garden, including the Shapleigh and Waldemer fountains. She also supervised the installation of the Japanese Garden in collaboration with Karl Pettit, III. Her professional credits include landscape design of a long list of St. Louis public and private places such as Westport Plaza, Maritz, Inc. in Fenton, the Steinberg Memorial Rink in Forest Park, the entrance to Lambert-St. Louis International Airport, the McDonnell Douglas Engineering and Space Center, and the Joseph Pulitzer estate.

Mrs. Bakewell's papers are an excellent record of her professional practice and community involvement over the last 35 years. Dr. Moore's papers give an interesting view of his personality, community involvement, scientific interests and personal life which complements official records already in the Garden's archives.

—Martha Riley, Archivist

New Biology Ph.D. Program at UMSL; Fellowship Named for Raven

A new doctoral program in Biology at University of Missouri-St. Louis was announced at a meeting of the University's Board of Curators, held at the Garden on June 24, 1988. The new program, a cooperative effort between the Garden and the University, will concentrate on evolutionary biology with emphasis on plant systematics and environmental studies.

In inaugurating the new doctoral program, UM-St. Louis Chancellor Marguerite R. Barnett also announced that the University has established the Peter H. Raven Fellowship in Tropical Ecology in honor of the director of the Garden. Dr. Raven has served as a curator of the University of Missouri since 1985, and is an adjunct professor in Biology at UM-St. Louis. The first fellowship will be awarded in 1989.

In the past 15 years UM-St. Louis and the Garden have developed strong cooperation in research and graduate studies in biology. Some Garden staff hold adjunct faculty positions at the University, and members of the University biology department are research associates at the Garden. UM-St. Louis has offered a master's degree in Biology since 1973.

16 YEARS OF SERVICE—Violet M. Dettman retired from the staff of Tower Grove House on March 1, 1988, after 16 years with the Garden. Her many contributions will be sorely missed. Mrs. Dettman's grandson Tad continues the tradition of service on the staff of the horticulture department.

REPORT FROM MADAGASCAR continued

informs us is also new. Returning from the ridge to camp in pouring rain, we were unable to ford another swollen river. Our guides felled a traveller's tree *(Ravenala madagascariensis)*, and we proceeded to shinny our way across.

In April Gentry arrived to work with me on Nosy Mangabe, a 520-hectare island at the head of the bay just five kilometers from Maroantsetra. I am preparing a florula of the island, a special reserve for perhaps the strangest of the Madagascar lemurs, the aye-aye *(Daubentonia madagascariensis)*. Preliminary results of the transects Gentry and I completed during his visit indicate that the forest is among the most diverse he has ever sampled.

Also on the island at the time was Hilary Simons, a doctoral candidate at Yale University who is studying the black and white ruffed lemur *(Varecia variegata variegata)*. She returned to camp each evening with the exciting observation that her lemurs were feeding on the nectar from flowers of a sapotaceous tree, *Labramia costata*, raising the distinct possibility of pollination by lemurs. In addition to providing good company, Hilary's presence on the island greatly benefits my own studies. Her lemurs are far better than I am at finding flowers and fruits high up in the canopy.

Next January we hope to embark on an ambitious project in collaboration with the development division of the Malagasy Lutheran Church and the Ministry of Water and Forest. The goal will be to integrate conservation of Masoala's magnificent forests with development, establishing a new national park of more than 3,000 square kilometers, and at the same time improving agricultural production and health care in the villages on the periphery of the park. The project, with support currently pending from the U.S. Agency for International Development (USAID), would also include a program of biological inventory by multidisciplinary teams of international and Malagasy scientists and students. They will survey not only the flora, but also the fauna of Masoala.

When we finally are able to return to the swamp with *Voanioala* and *Vitex masoalensis* above Antalavia, I wouldn't be a bit surprised to find a new species of frog calling contentedly during a week-long downpour.

George E. Schatz, Ph.D. is assistant curator for the Garden's Madagascar Research Program. He joined the Garden in January 1987 and lives most of the year in Madagascar.

1888: Henry Shaw ecorts Julia Trelease (left) and an unknown lady around the Garden.

GARDEN GUIDES CELEBRATE 20 YEARS

Henry Shaw, of course, was the first Garden Guide. His visitor books are filled with autographs and comments of Mark Twain, Sir Joseph Hooker of Kew Gardens, Edwin Booth, General William T. Sherman and others. Shaw personally escorted many of his visitors through the Garden until his death in 1889; since then staff members and Garden volunteers have continued his practice.

In 1968 the Garden Guides were officially organized with the help of the Friends of the Garden. Kenneth Peck, then head of the education department, and Garden colleagues trained 25 women to give tours of the Garden on a daily basis.

To celebrate their twentieth anniversary, the Garden Guides, now 70 strong, are planning a festive luncheon on September 13. They have asked Ken Peck to reminisce about the "good old days" of basement offices and makeshift classrooms, no secretary to make appointments, and a mischievous monkey in the Climatron.

The first 25 volunteers were allowed to give only general tours to elementary school children. The Guides have grown in responsibility and scope. Today they recruit, train and manage their own organization, and their tours cover topics as diverse as the Japanese Garden, Ecology, Plants We Eat, the Climatron and Sculpture at the Garden.

Under co-chairmen Nancy Thompson and Peggy Abel the Garden Guides contributed more than 5,000 hours to the Garden and gave tours to 17,000 people in 1987. Other Guide tasks include hosting exhibitions, doing research, and always aiming to fulfill Henry Shaw's mission to share knowledge and an appreciation of plants. The Guides—the men and women in the dark green vests—relish their volunteer duties at the Garden and are proud to carry on one of Mr. Shaw's favorite activities.

—*Mary Jane Kirtz*

1988: Catherine Schumann, a long-time Garden Guide, continues the tradition with a group of young visitors.

Dedication of the G. Stuart Jenkins Daylily Garden

On June 20, 1988, the Garden honored Mrs. Ada Jenkins Kling for her generous gift of the daylily garden in memory of her husband G. Stuart Jenkins. Mrs. Kling's close family, including her son James Jenkins and his wife Jane, participated with her loving friends in a special dedication of the garden.

The daylily garden, situated south of Flora Gate on the east side of the Garden, is always in flux. When daylily season approaches, some flowers are blooming, others have finished blooming, and still others have large ripe-looking green buds that are waiting to burst into bloom. The peak time of blooming is mid-June.

One of the most striking characteristics of daylilies is color. They bloom in a multitude of colors, including near-white, yellow, orange, pink, purple, a deep velvety purple that approaches black, pure white, red, and true blue.

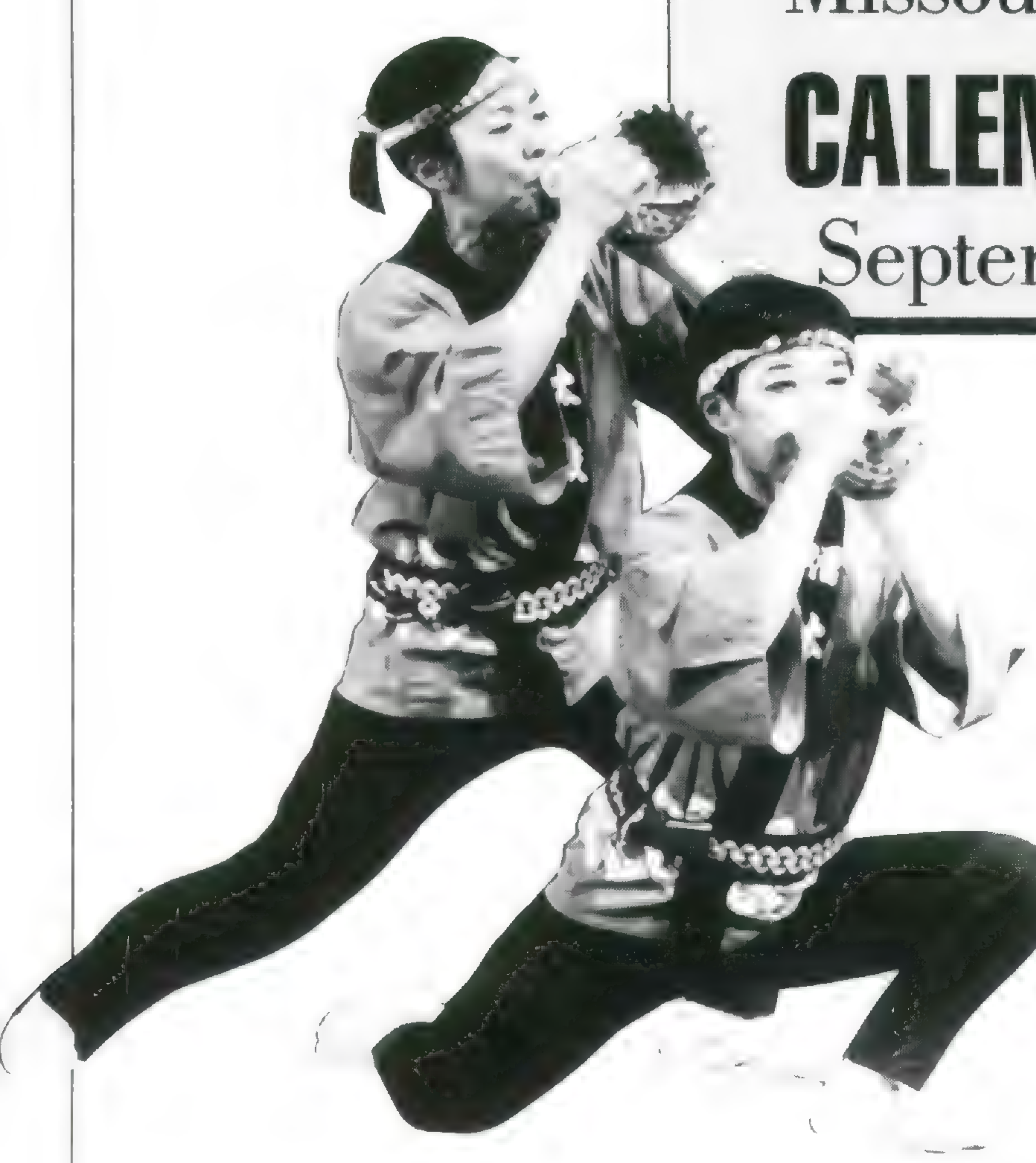
The G. Stuart Jenkins Daylily Garden stands as a fitting memorial to Mrs. Kling's late husband and to his love of beauty. It also, most fittingly, has been made possible through Mrs. Kling's own love of beauty and of gardens.

Mrs. Kling

Missouri Botanical Garden

CALENDAR OF EVENTS

September-October 1988



SEPTEMBER 1-5 / JAPANESE FESTIVAL

13th annual festival continues, 9 a.m. to 8 p.m. daily (until 10 p.m. on evenings with candlelight walks), Ridgway Center and grounds. Performing arts, exhibits, crafts, music and much more. Complete schedule of events is available at the ticket counter. Free to Members.

SEPTEMBER

6 TUESDAY

Garden Hours Change

9 a.m. to 5 p.m. daily until May 28, 1989. Garden is closed on Christmas Day.

Walking Tour

1 p.m. Meet at Ridgway Center ticket counter rain or shine for a tour of the grounds led by Garden Guides. Free.

8-11 THURS.–SUN.

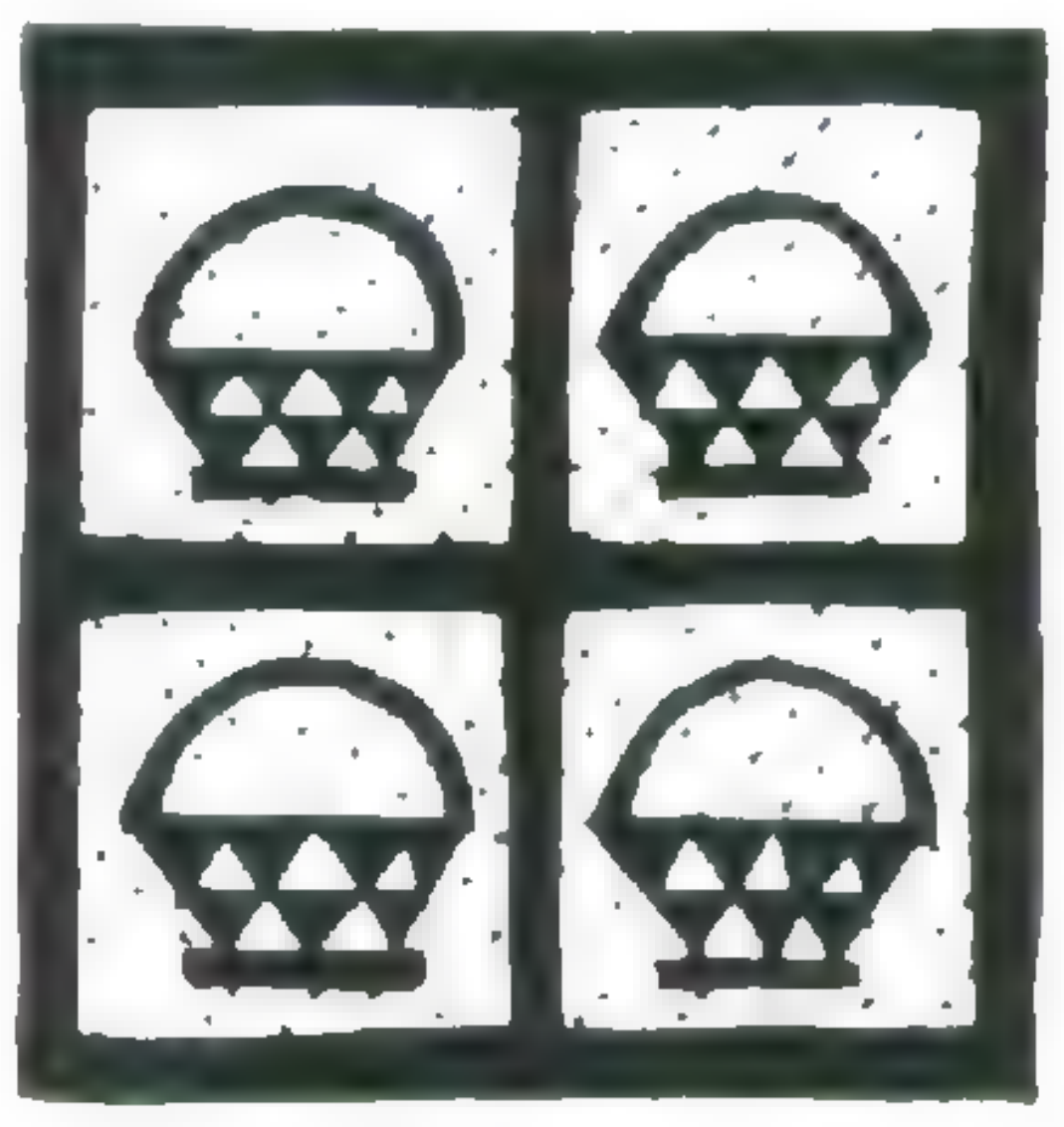
Fall Sale and Bulb Extravaganza

9 a.m. to 5 p.m. daily, Garden Gate Shop and Orthwein Floral Display Hall; for Members' Preview Thursday and Friday, sale will be open until 6:30 p.m. Members receive 20 percent discount on all merchandise and plants, all four days.

10 SATURDAY

Quilt Display

9 a.m. to 5 p.m. daily through October 2, Monsanto Hall. Tower Grove House Auxiliary presents an exhibit of antique quilts, plus the first display of a new album quilt commemorating the Garden. The Garden quilt is composed of 32 panels chosen from many submissions; it was quilted by volunteers from a number of local organizations. Free.



Walking Tour

1 p.m. See September 6 for details.

11 SUNDAY

Walking Tour

2 p.m. Meet at the Ridgway Center ticket counter rain or shine. Learn about the Garden with a tour led by Garden Guides. Free, but reservations are required for Sunday tours. Call 577-5140.

13 TUESDAY

Walking Tour

1 p.m. See September 6 for details.

15 THURSDAY

Quilting Lecture

1:30 p.m., Shoenberg Auditorium. Ann Watkins of *Patches Etc.* gives a slide lecture, "St. Charles County Quilts: A Family Tradition." Will discuss generations of the art of quilting, with examples from the early 19th century and earlier. Free.

17-18 SAT.–SUN.

Men's Garden Clubs Display

Noon to 5 p.m. Saturday, 9 a.m. to 5 p.m. Sunday, Orthwein Floral Display Hall. A display by the Greater St. Louis Men's Garden Clubs. Free.

17 SATURDAY

Walking Tour

1 p.m. See September 6 for details.

18 SUNDAY

Walking Tour

2 p.m. See September 11 for details.

19 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. On-the-spot identification of plar and horticultural troubleshooting Master Gardeners and other experts. Sponsored by KMOX Radio. Free.

20 TUESDAY

Walking Tour

1 p.m. See September 6 for deta

22 THURSDAY

First Day of Autumn

Join us for a stroll and enjoy the early fall colors.

23 FRIDAY

Members' Sculpture Walk

5 to 7 p.m. Meet on Spoehrer Pl for tours led by the Garden Guid Featuring the newly-installed Ca Milles bronzes in the waterlily pools. Cash bar and light refreshments available. *See back cover.*

Lecture by Roberto Burle Mar "Glorious Gardens: Landscap Design as Art"

7:30 p.m., Shoenberg Auditoriu The celebrated Brazilian landsca architect, painter and botanist discusses his work and career. $4 Members, $5 Non-members. Tickets can be purchased at ticke counter starting Monday, Septem 19, or at the door. *See back cover.*

24-25 SAT.–SUN.

Dahlia Society Show

Noon to 5 p.m. Saturday, 9 a.m. 5 p.m. Sunday, Orthwein Floral I play Hall. The Greater St. Louis Dahlia Society celebrates its 50th anniversary with a lavish display form, size and color. Free.

4 SATURDAY

lking Tour
m. See September 6 for details.

5 SUNDAY

king Tour
m. See September 11 for details.

7 TUESDAY

lking Tour
m. See September 6 for details.

OCTOBER

SATURDAY

**naging Your Backyard
odlot**
) a.m. to 2 p.m., Shaw Arbore-
. The Missouri Tree Farm
nmittee will lead tours to dis-
s timber stand improvement,
ases and insects, improving
llife habitats, and other conser-
on topics. In case of rain, talks
be given in the Trail House.
e to Members, but participants
uld pre-register by calling
5138.

king Tour
m. See September 6 for details.

2 SAT.–SUN.

t Display continues
m. to 5 p.m. See September 10
details.

neriad Society Show
n to 5 p.m. Saturday, 9 a.m. to
m. Sunday, Ridgway Center. A
lay of plants from the family that
udes the African Violet. Free.

SUNDAY

king Tour
n. See September 11 for details.

dren's Art Festival
m. to 4 p.m., Ridgway Center
Cohen Amphitheater. Activities
performances designed to
nce the artistic and cultural
eness of children. Presented by
Arts & Education Council of
ter St. Louis. $1 per person.

4 TUESDAY

Walking Tour
1 p.m. See September 6 for details.

6 THURSDAY

Members' Preview of Missouri Wildlife Artists' Show
5 p.m. to 8 p.m., Monsanto Hall. An advance look at the exhibit; see October 7. Music and cash bar. For Members only.

9 SUNDAY

Walking Tour
2 p.m. See September 11 for details.

11 TUESDAY

Walking Tour
1 p.m. See September 6 for details.

15 SATURDAY

Walking Tour
1 p.m. See September 6 for details.

22 SATURDAY

Walking Tour
1 p.m. See September 6 for details.

22-23 SAT.–SUN.

Lily Bulb Sale
9 a.m. to 5 p.m., Ridgway Center. A fine selection of lily bulbs offered for sale by the Mid-America Regional Lily Society. Free.

23 SUNDAY

Walking Tour
2 p.m. See September 11 for details.

OCTOBER 9 / MEMBERS' FAMILY EVENT

3 p.m. to 6:30 p.m., Ridgway Center and grounds. A new event for Members only. Magic shows, face painting, music, a treasure hunt sponsored by the MoBot Club and more. The popular picnic pass will be available. Watch the mail for details.

OCTOBER 16 / MEMBERS' CAMERA DAY

3 p.m. to 4 p.m., Shoenberg Auditorium: Slide lecture by Jack Jennings, photographer for the Garden's annual calendar. 4 p.m., grounds: Members of the McDonnell Douglas Photo Club will be available to offer expert tips on photographing the Garden. Bring a camera! For Members only.

7 FRIDAY

Missouri Wildlife Artists' Society Show
9 a.m. to 5 p.m. daily through November 13, Monsanto Hall. An exhibit of more than 50 works of painting and sculpture by 23 Missouri artists. Funded in part by the Missouri Arts Council, a state agency. Free.

8 SATURDAY

Walking Tour
1 p.m. See September 6 for details.

15 SATURDAY *continued*

In the Wild
11 a.m. to 5 p.m., Ridgway Center. Activities that highlight works of art in the Missouri Wildlife Artists' Show (see October 7). Free.

16 SUNDAY

Walking Tour
2 p.m. See September 11 for details.

18 TUESDAY

Walking Tour
1 p.m. See September 6 for details.

25 TUESDAY

Walking Tour
1 p.m. See September 6 for details.

29 SATURDAY

Walking Tour
1 p.m. See September 6 for details.

30 SUNDAY

Walking Tour
2 p.m. See September 11 for details.

FROM THE MEMBERSHIP OFFICE

Hidden Treasure

The all new Members' Family Event will be held Sunday, October 9, from 3:00 p.m. to 6:30 p.m. Families with children of all ages are invited to enjoy our popular picnic pass privilege while having fun with magic shows, face painters, music and more. Our highlight for the afternoon will be a Garden Treasure Hunt sponsored by the MoBot Club, complete with maps and prizes. It will be an afternoon of "fun firsts" at the Garden your family will love. Watch the mail for details.

Camera Day

The Members' Day on Sunday, October 16 brings an opportunity to photograph the Garden with the aid of expert advice. At 3:00 p.m. Jack Jennings, photographer for the Garden's annual calendar, will present a slide lecture in Shoenberg Auditorium featuring his beautiful photographs. After the lecture, several expert photographers from the McDonnell Douglas Photo Club, including Mr. Jennings, will be available in strategic locations on the grounds to offer help and suggestions for improving your own pictures. Bring your camera!

Meet MoBot

MoBot, the mascot of the Garden's club for junior Members, made his first appearance at the MoBot Fun Day at Shaw Arboretum, June 18, 1988.

Membership Dues to Increase in 1989

Membership dues for regular level Members at Missouri Botanical Garden will increase from $35 to $40 in 1989. Membership benefits for a regular member include:

- Free admission for two adults and children under the age of 16
- More than 20 invitations during the year to special Garden events including four "Members only" flower show previews, 12 members days, and four or more major members' events
- A 10 percent discount at the Garden Gate Shop
- Free subscription to the bimonthly *Bulletin*
- Free reciprocal admission at other botanical gardens throughout the country
- Discounts on education classes and facility rentals at the Garden
- Travel opportunities through the Membership Travel Program

The new dues structure will take effect January 1, 1989. Members renewing prior to that time can renew at the $35 level.

The Garden Neighborhoods

On July 13, the Garden's Board of Trustees learned about the health and activity of the Garden neighborhoods in a special program presented during the Trustees' meeting.

John Temporiti and Phyllis Evans reported about the activities of the Southwest Neighborhood directly west of the Garden. This neighborhood occupies the area sold in 1925 by the Trustees in order to provide funds for the purchase of the Shaw Arboretum.

"The major goals of the Southwest Neighborhood Improvement Association include beautification, reforestation, building code enforcement and an innovative mortgage loan guarantee program encouraging owner occupancy of four-family residential units," Mr. Temporiti said. He is the founder of the Southwest Neighborhood Improvement Association and Mrs. Evans serves as the association's executive director.

Speaking on behalf of the Shaw Neighborhood were Dana Hines, the Garden's membership marketing coordinator and president of the Shaw Neighborhood Improvement Association, and association vice president Michele Duffe. The Shaw Neighborhood encompasses the area east of the Garden to Grand Avenue and is one of the city's most active volunteer neighborhood groups, with a membership of 750 families. "The neighborhood, which is undergoing major renovation projects, has been the recipient of funds from a variety of city programs. Over $10,000,000 in reinvestment has taken place in the area as a result of this support and attention," Ms. Hines explained.

Major accomplishments of the Shaw Neighborhood's volunteer efforts during the past year include the establishment of a conservation district, a youth recreation program, a crime deterring citizen's mobile patrol, and the redevelopment of the neighborhood's old commercial district on 39th Street.

The Shaw neighborhoods are part of a comprehensive marketing effort by Mercantile Bank known as the Tower Grove Partnership. Mercantile has committed its staff and financial resources totaling over $1,000,000 to Shaw and the Tower Grove neighborhoods.

Donnell Reid, vice president of Community Affairs at Mercantile and a member of the Garden's Members' Board, is the president of the Tower Grove Partnership.

Engagement Calendar Benefits Garden

The Basic Foundation has generously agreed to make a $2 donation to the Garden for each copy of its *Tropical Rainforests: An Engagement Calendar for 1989* sold by mail to Garden members. The calendar is a handsomely designed book, six by nine inches, lavishly illustrated with spectacular color photographs and an eight-page essay on tropical rainforests by Pete Carmichael. To order, send $8.95 plus $1 shipping and handling per copy to: The Basic Foundation, Inc., P.O. Box 47012, St. Petersburg, Florida 33743. Please indicate on your check that you are a Garden member.

TRIP TO ITALY

"Amazing." "Incredible." "Unbelievable!" The Garden's two week trip to the gardens and villas of northern Italy last May inspired superlatives. Gardens were adorned with sculptured hedges, pots filled with lemons, 300-year-old cypress, gorgeous irises, roses in full bloom, colorful annuals and statuary. Views included cities, lakes, mountains and fields of bright red poppies among the many unforgettable sights on the trip. Most of the villas and gardens are private and not open to the public. By traveling with the Garden we were able to see much that is unavailable in any other way.

Florence, Asolo, Verona and Bellagio on Lake Como were the destinations. From formal gardens, to a castle on an island, to a garden with a mountain waterfall in the "front yard," to a villa with its own church in the "backyard," to Palladian villas and the famous frescoes by Giotto in Padua, we saw one marvelous delight after another.

Padua also afforded us a guided tour of its botanical garden, a 16th century garden renowned for its medicinal plants. The Padua garden has specimens of our familiar dawn redwoods, planted from seeds at the same time as those outside the Lehmann Building. Another reminder of the Garden's presence worldwide were the waterlilies "Director Moore" and "St. Louis Gold."

Pictured above is Villa La Pietra, Sir Harold Acton's garden on a hillside near Florence.

—Patricia Rich

1989 Travel Program for Members

ECUADOR—A trip designed for lovers of nature and adventure. Includes a stay in the Garden's Jatun Sacha Biological Station, located in the Amazonian rainforest. *Winter 1989.*

ENGLAND—Celebrate the Centennial of the Garden's Board of Trustees by traveling to Henry Shaw's England, including a visit to the Chelsea Flower Show. *Spring 1989.*

Watch your mail and upcoming *Bulletins* for exciting details!

Dr. Raven (center) accepting the fourth contribution on Union Pacific Foundation's $50,000 pledge toward the renovation of the John S. Lehmann Building from David Hartung (right) of Union Pacific Systems and his daughter Beth (left), a Garden employee.

GIFT MEMBERSHIP ORDER FORM—*Please mail at least three weeks prior to occasion:*

☐ *Holidays* ☐ *Birthday* ☐ *Other* ____________

Gift To:

NAME ____________

ADDRESS ____________

CITY ________ STATE ______ ZIP ______

TELEPHONE ____________

Sign gift card: ____________

Date Needed By: ____________

Regular Membership $35. Contributing Membership $75.

For more information call 577-5118.

Gift From:

NAME ____________

ADDRESS ____________

CITY ________ STATE ______ ZIP ______

TELEPHONE ____________

☐ Enclosed is my check for $ ____________

☐ Please charge: VISA No. ____________

MasterCard No. ____________

Name as it appears on card: ____________

Expiration date: ____________

Please make checks payable to: Membership Office, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.

Dr. Raven presents Frank Arnoldy with the Special Service Award.

Mim Kittner receives her award from Dr. Raven.

VOLUNTEER EVENING

On Thursday June 2, 1988, Spoehrer Plaza was the scene for Volunteer Evening, an annual reception honoring outstanding Garden volunteers. More than 250 volunteers and guests attended. Dr. Raven presented the awards.

Recognized with special service awards were **Frank Arnoldy** and **Mim Kittner** (pictured above). Mr. Arnoldy gave 404 volunteer hours in 1987, working as a Master Gardener. Mrs. Kittner, past president of the Members' board, has worked with the Garden since 1973, most recently as head of the Membership Information and Services desk. She also was honored for her work coordinating volunteers for the 1987 Japanese Festival, along with Jean Crowder.

Maurita Stueck received a Special Achievement award. She was recognized for her development of an innovative training program for new Garden Guides.

Recipients of the Commitment Award were **Bertha Burton**, who works in the Botanical Information Resources department, and **Warren "Tab" Tabachik**, who gives nine months a year in the Climatron.

The Volunteer Emeritus award went to **Gladys Yates** for her invaluable assistance in the Controller's Office.

Special recognition was given to **Joyce Broughton**, **Adrienne Biesterfeldt** and **Sara Moore** for their preparation of an inventory of the English Woodland Garden. The plant-by-plant listing took all of last summer, and required extraordinary skills and teamwork.

The Garden is proud to be associated with each of our outstanding volunteers, and is immeasurably grateful for their dedicated service.

Final Part of Persimmon Hill Comes to Arboretum

The Missouri Botanical Garden marked with sadness the passing of Mrs. Elise Bachmann Morton on March 8, 1988. Mrs. Morton and her late husband Stratford Lee (1887-1970), ex-President of the Academy of Science of St. Louis, were long-time community philanthropists and Garden patrons. With Mrs. Morton's death, the Garden will receive the last portion of a significant property gift located at the Shaw Arboretum in Gray Summit, Missouri.

Before Mr. Morton's death in 1970, he and his wife had decided that they would donate to the Garden approximately 250 wooded acres called Persimmon Hill, which had been the Morton country home since the 1920s. Placed along the Arboretum's southwest edge, Persimmon Hill greatly enhances the Arboretum's holdings. Its location both offers protection against encroaching urban development and adds to the Arboretum's existing border along the scenic Meramec bluffs. Persimmon Hill, with its numerous lovely glades, also preserves available habitat for wildlife, particularly the larger mammals which need significant amounts of space to survive.

Mr. Morton died in 1970 before these arrangements could be finalized, and his will gave equal parts of Persimmon Hill to his wife and his daughter, Katherine Morton Dick. To carry out his wishes, Mrs. Morton and Mrs. Dick devised a program whereby the majority of the property would be donated over a period of years to The Nature Conservancy, a private, nonprofit international conservation organization whose sole mission is the preservation of biological diversity, primarily through acquiring and protecting ecologically significant tracts of land. The Nature Conservancy would in turn lease Persimmon Hill to the Garden for the token fee of $1 over an essentially indefinite time period, provided the Garden did not develop the property or put it to other uses not intended by the Mortons.

Mrs. Morton and Mrs. Dick retained equal interest in an 8.5-acre parcel, including three colonially styled structures (a main residence, museum, and guest house), with the same gifting provisions to apply upon their deaths. When Mrs. Dick passed away in 1979, her share was added to the majority of the land already at the Arboretum; now, the tract is once more complete. Dr. Peter Raven observed, "We owe much to the Morton family for their generous gifts through the years, particularly the Persimmon Hill tract. We are, of course, greatly saddened at the death of a good friend, but we are also very pleased to be able to use their wonderful legacy as part of our environmental education programs, to which the 2500-acre Arboretum is principally dedicated."

In Memoriam

A. Timon Primm III

Friends and staff of the Garden were deeply saddened by the sudden death of A. Timon Primm III, Emeritus Trustee of the Garden, on June 24, 1988.

Mr. Primm, 73, was a devoted, long-time friend of the Garden, serving on the Board of Trustees for 24 years. An ardent conservationist, Mr. Primm was a driving force in the Missouri Chapter of the Nature Conservancy and also served on their national Board of Governors 1975-1979. He loved natural lands in Missouri and elsewhere and gave unselfishly in many ways to help conserve them. As a member of the Garden's Board of Trustees, he was especially interested in the Arboretum, working diligently for its expansion and preservation.

Mr. Primm retired from the Pulitzer Publishing Company in 1979 as general manager and senior vice president. His career with the company spanned more than 40 years.

At a memorial service at St. Peter's Episcopal Church in Ladue, on June 27, 1988, Mr. Primm's son, Sandy, read the eulogy presented on this page.

The Garden extends its deepest sympathy to Mr. Primm's wife and family. His commitment to the Garden and, in particular, the Arboretum was unparalleled. He will be missed.

The observation deck overlooking the experimental prairie at Shaw Arboretum has been named for Mr. Primm, and two benches have been placed there in his honor. The benches were built of native white oak cut from Arboretum windfalls.

A Man Who Planted Wildflowers

An Elegy for A. Timon Primm III, Sept. 14, 1914-June 24, 1988

Five days ago I met him at one of his favorite parts of the world, the Belleview Valley of the Missouri Ozarks, where he, family and friends spent many days enjoying the hills and the ticks. We had lunch Thursday on the screen porch at Possum Trot, the farm of Virginia and Leonard Hall, now in their well-considered 90s, and their grandson Rick and his family. With my friend Doug Wixson we talked about how good the shower sounded that stayed over the valley for a while as we assayed the hay and bluebird crops. Then the sun came out, we drove down the hill and crossed Saline Creek to a large bottomland pasture my father owned in part because it harbors the rare Purple Fringeless Orchid and gave him another connection to what he loved.

Of course he loved many people, many things, and had strong ideas, being a Frenchman and farmer at heart. By the next evening, before dark last Friday, he was dead. Timon ate all the oat bran he could, but it just wasn't enough. He had time only to say goodbye to his wife and a few handfuls of wildflower seeds.

What he would say to us now if he could would be a fierce, joyful diatribe befitting his Old Testament name and Huguenot blood, proud to be an upstanding American small 'd' democrat and however reluctant taxpayer. But on Thursday he spoke only through shovel and hoe and a bag of prairie wildflower seeds, given to him by friends, on a field where he hoped to raise native grasses. The self-appointed godfather of prairie chickens, his friends' grandchildren and wild public lands carefully broke up the dried seedheads of these flowers. He mixed together enough different seeds for us to plant on a hot summer afternoon. Timon wasn't a man to rush things. He had planted everything from yearly family live Christmas trees to modern printing plants, and wanted even a little project like this planting to be done right.

In this much he got his wish—he will never be an invalid. Only God knows if it will ever rain on those few dozen patches of Bundleflower, Liatris and Purple Coneflower seeds he planted last Thursday in the depths of drought. He hoped he had fledged some bluebirds this spring, had loved two operas and festivities with friends and helped pass petitions for soil conservation and the state parks. When we were finally finished with our job on the pasture, Timon said, "a few of these seeds planted in dry soil just might make it. Seed can lie dormant in dry ground a long time and still come up when the weather turns right." —By Alex T. Primm,
with help of friends, mother, sisters and wife

The Wilderness Wagon Rides Again

The Arboretum will once again offer narrated tours on the popular Wilderness Wagon. The wagon will run on Sundays from September 11 through November 6. Depending on the season, visitors may see thousands of daffodils, delicate wildflowers, the tall prairie, fall foliage, many species of birds or, with luck, deer or wild turkey. The Wagon leaves the Visitor Center on an hourly schedule and stops at the Trail House. Visitors may spend time walking on the woodland trails and return to the Visitor Center on a later trip.

The Wilderness Wagon may also be reserved by groups Monday through Friday from 8:30 a.m. to 4:00 p.m. For more information on the Sunday tours or group rental, please call the Arboretum at 577-5138 or 742-3512.

Loop Road To Open

Shaw Arboretum will again open the Trail House Loop Road on Wednesdays and Thursdays, for those who find walking difficult. For safety reasons, visitors are asked to stop and register at the Visitor Center. From September 7 through November 10, the Loop Road will be open to vehicles from 8:00 a.m. to 4:00 p.m. For more information, please call the Arboretum at 577-5138 or 742-3512.

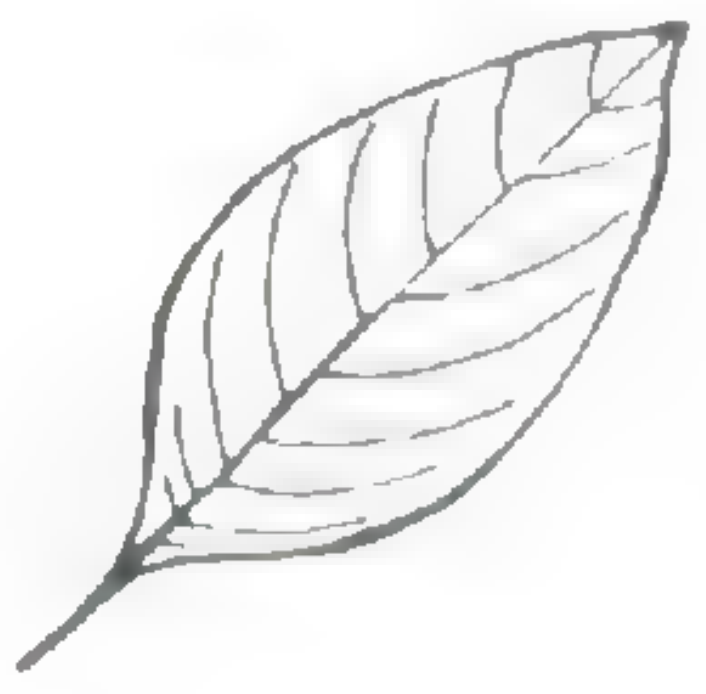
For Younger Members

Identifying Trees

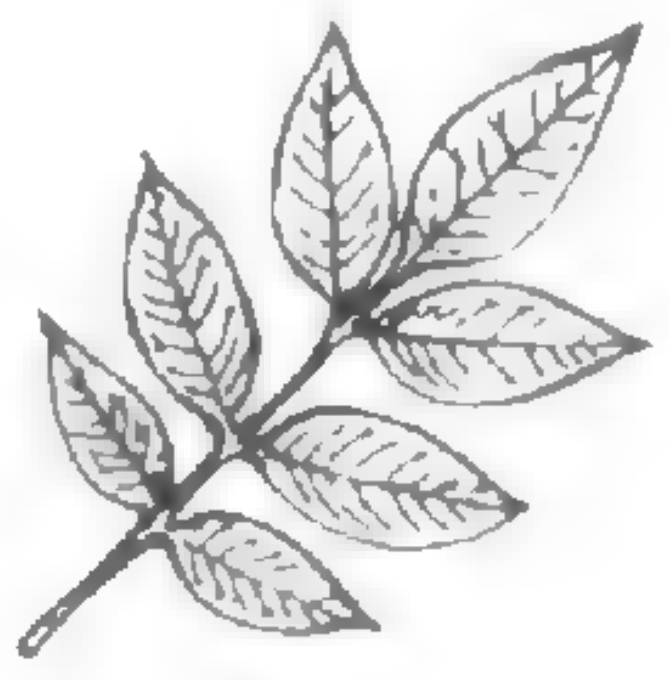
A hike through the woods on a fall afternoon is always a colorful adventure, but you will find the forest even more interesting when you learn to identify the trees. Missouri has more than 200 species of trees and each has characteristics that help identify it. You can learn to identify trees yourself by looking at their leaves.

Leaves can be classified into two basic categories, simple and compound. A simple leaf has one leaf blade on the leaf stalk (petiole). A compound leaf has multiple leaf blades on a petiole. Look at trees in your neighborhood and see if you can find leaves that look like the examples below.

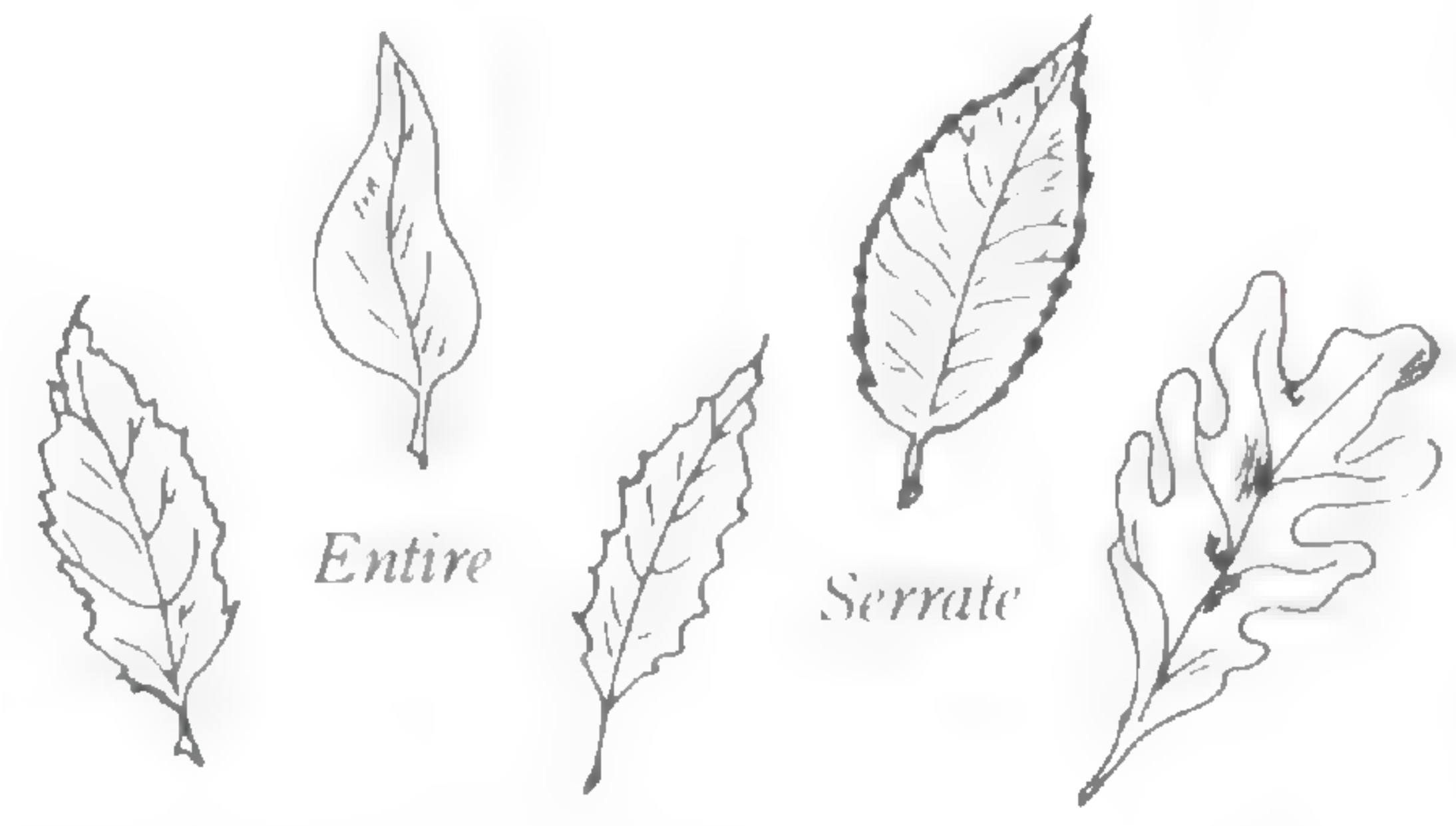
Simple



Compound

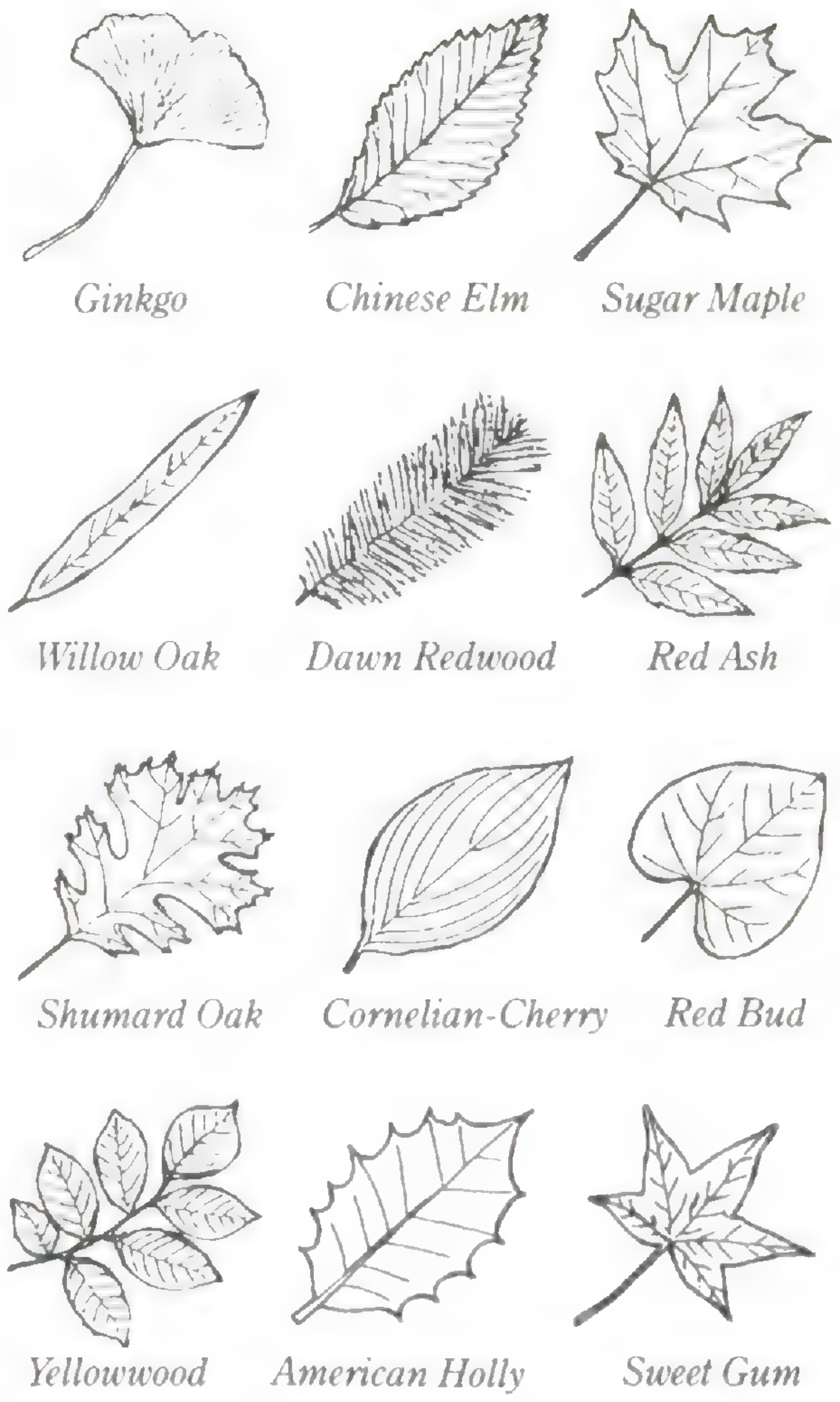


Another way to identify leaves is to look at the leaf margins (edges). Some margins have teeth like a carpenter's saw. Other margins are whole and smooth.



Maple trees have deeply cut margins that are called lobed. Some leaves look like needles. These belong to a group of trees called conifers.

You can do some simple identifications by using the chart at right. Try to find trees that have leaves that match those on the chart. If you are interested in learning more about tree identification, you can check out a book from your library.



PROJECT / *Building a Plant Press*

Use a plant press to dry your leaf collection before you mount the specimens. Making a plant press is easy. You can use scrap lumber and follow the simple directions listed below. Ask an adult to help you.

You will need:

64 small nails

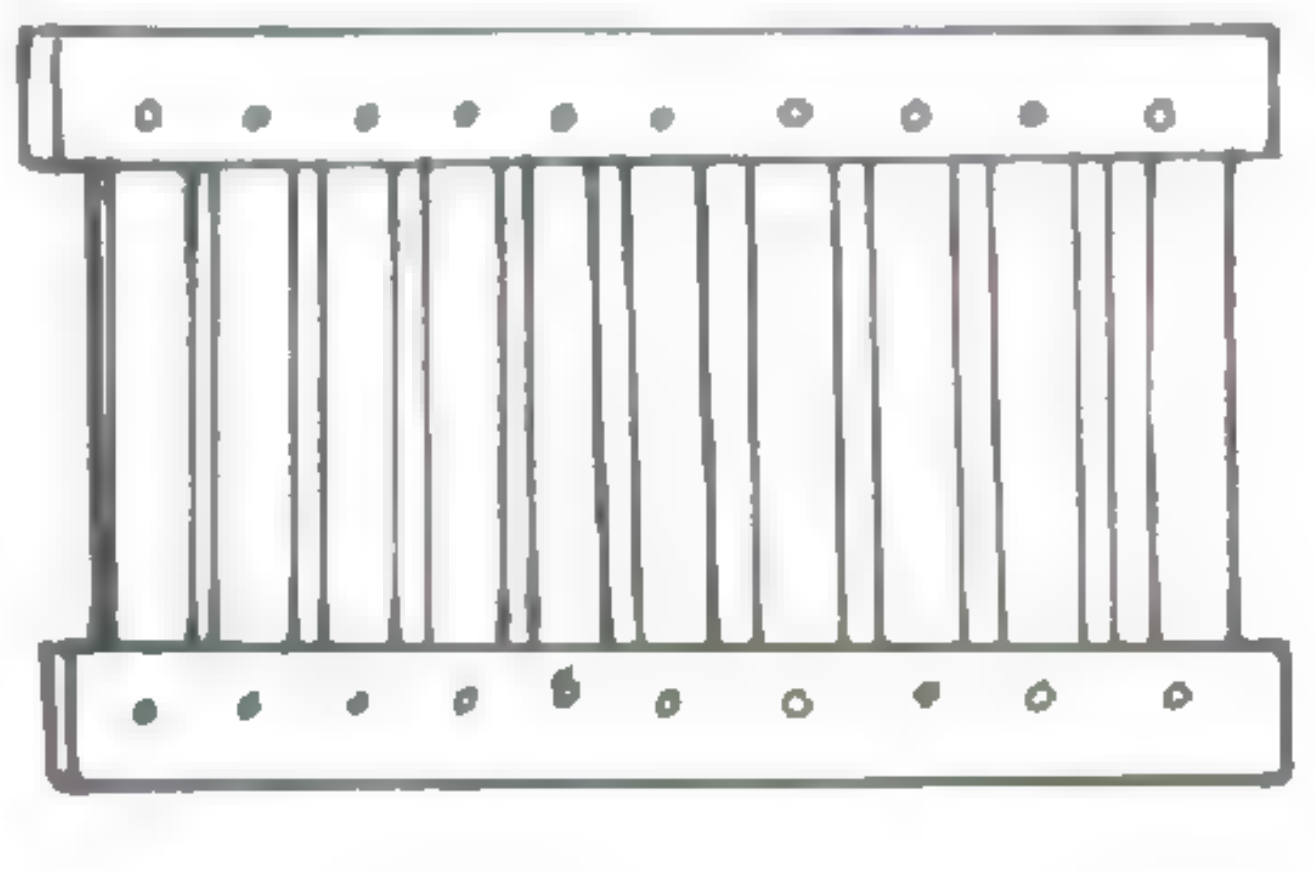
Lightweight hammer and saw

What to do:

1. Measure and saw out four pieces of wood 18 inches long, 1½ inches wide and about ⅜ inches thick.

2. Cut 16 pieces of wood 12 inches long, 1 inch wide, and ¼ inch thick.

3. Make two frames out of the slats. Use one-half of the material for each frame. They should resemble the drawing below.



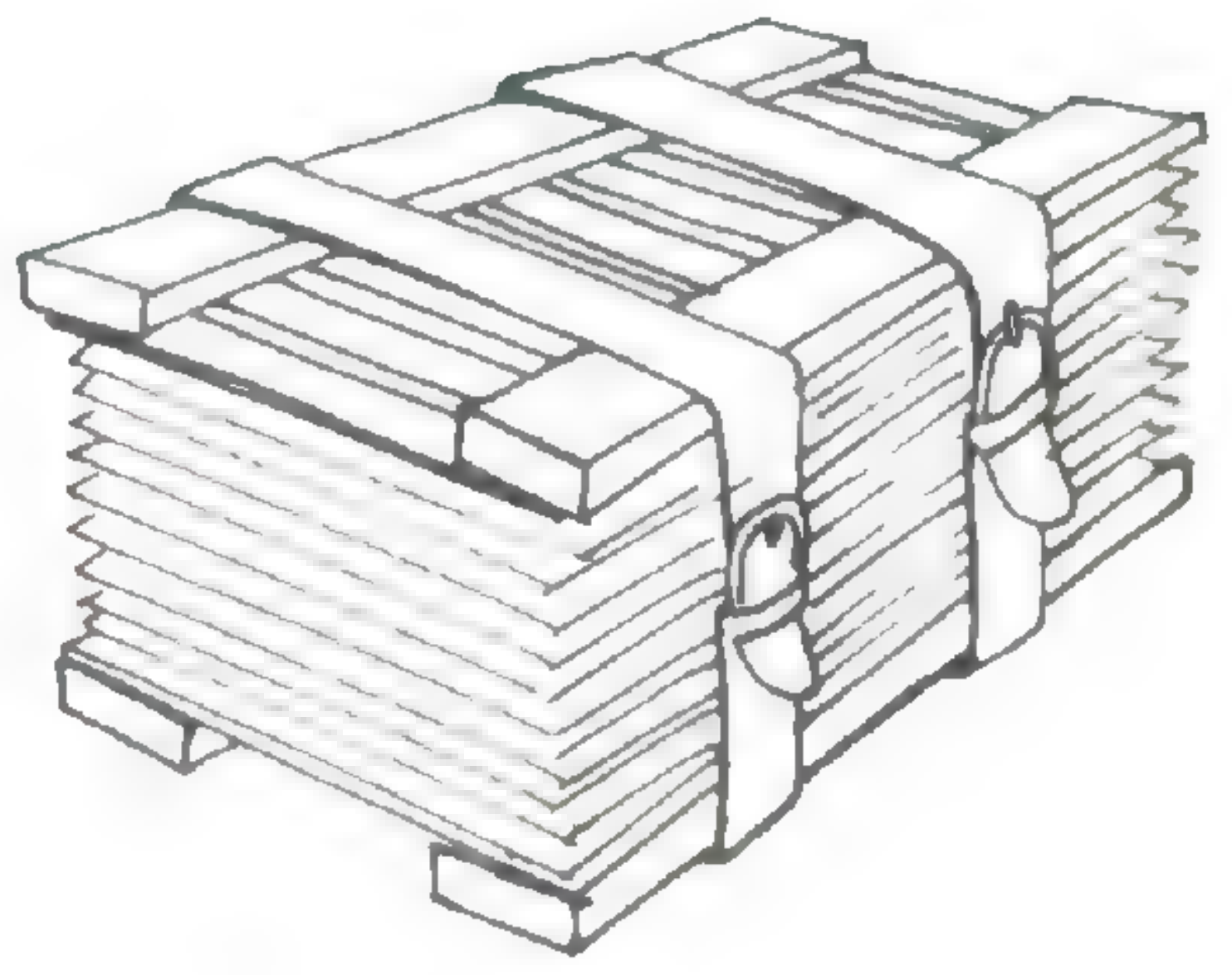
To make the press ready for use, get the following:

1. Two buckle straps or pieces of rope, each about four feet long.

2. At least 20 newspaper sheets for holding plant specimens.

3. Several sheets of corrugated cardboard.

When you have collected your leaf specimens, place them in the plant press within a few hours of collection. Lay one of the frames on a table and cut a piece of cardboard to fit. Lay several sheets of newspaper on the cardboard. Put a specimen on top of the newspaper. Add several more sheets of newspaper, another piece of cardboard, and repeat until your press is full. Then put a sheet of cardboard over the top of the pile and your other frame on top of this. Wrap the press tightly with your straps and place it in a warm place to dry.



When your plant specimens have dried in the plant press for five to ten days they will be ready for mounting. The paper for mounting should be stiff enough not to buckle when handled and should be at least 12 x 16 inches in size. Use white glue to mount the leaves of each tree on a separate page.

Place a label on the page telling the name of the tree from which you collected the leaf, and include the common name, scientific name, date and place of collection and the uses of the tree. All this information will make it easier for another leaf collector to learn about your collection.

Fall Classes for Younger Members

The Henry Shaw Academy offers students aged seven and older exciting ways to investigate topics in science, ecology and natural history. A membership in the Academy is $15 per year, and includes newsletters, a membership card, invitations to special events and an Academy T-shirt. For a complete brochure on current HSA classes and activities, call 577-5140.

FALL 1988 Henry Shaw Academy Classes

Ages 7-9

Wet and Wild, Sept. 17
Adventures With Insects, Sept. 24
Memorable Missouri Mammals, Oct. 8
The World Through a Microscope, Oct. 29

Ages 10-13

River Ecology Canoe Trip, Sept. 25
Our Microscopic Planet, 2 sessions: Oct. 1, 15
Map and Compass Explorations, Oct. 22
Science Fair Experiments, 4 sessions: Oct. 29, Nov. 5, 12, 19

Saturday Morning Family Activities

These delightful activities are held at the Garden, for children five years of age or older. Children must be accompanied by an adult and adults must register with a child to attend. For more information, see the *1988 Fall Courses and Lectures* brochure recently mailed to Members, or call 577-5140.

Bees, Beetles, Butterflies and Flowers, Sept. 10
Forest Friends, Sept. 24
A Crystal Forest, Oct. 1
The Wonderful World of Plants, Oct. 22

Steyermark Receives Grant

Garden curator Dr. Julian A. Steyermark has received a grant of $150,000 from the National Science Foundation in support of a project titled "The Flora of the Venezuelan Guayana." The grant is effective through 1991, and it will help Dr. Steyermark and his research assistants to work toward their goal of publishing a fully illustrated flora of the plants of the region by next year.

The Venezuelan Guayana is the so-called "Lost World" area of Venezuela made famous by Conan Doyle's 1912 adventure classic. (See *Bulletin* issues for July/August 1987 and November/December 1986.) Dr. Steyermark is an authority on the flora of Venezuela, and has devoted 30 years to its exploration and study. He is credited with collecting more than 138,000 plant specimens, and is recognized in the *Guinness Book of World Records* as the "champion plant collector."

Behind the Scenes

Marketing Director Joins the Garden

Teresa A. Dresler has been named to the newly created position of director of marketing for the Garden, effective August 1, 1988. Ms. Dresler will report to Garden director Peter H. Raven. As director of marketing, Ms. Dresler will oversee operation of the Garden's food service, retail shops and visitor center. She will also be responsible for public relations, marketing and facility rental. Prior to joining the Garden, Ms. Dresler was convention manager for the A. J. Cervantes Convention Center. She holds a B.S. degree in social work from St. Louis University.

New Personnel Director Named

Sue L. Wilkerson has been named director of personnel for the Garden effective July 20, 1988. She will be responsible for all human resources programs. Before joining the Garden, Ms. Wilkerson was director, employee relations/affirmative action for St. Louis University, where she had been employed since 1985.

Ms. Wilkerson holds a master of business administration degree from Southern Illinois University-Edwardsville and is certified as Professional in Human Resources by the Personnel Accreditation Institute. She is active in many professional associations including the American Society for Personnel Administration, the Human Resources Management Association of Greater St. Louis and the Industrial Relations Research Association.

Ecuador Project Receives Additional Funding

One of the Garden's projects in Ecuador, "Trees of Amazonian Ecuador," has received additional funding of $60,000 from the U.S. Agency for International Development (USAID). Last summer USAID awarded the project with a $106,000 grant.

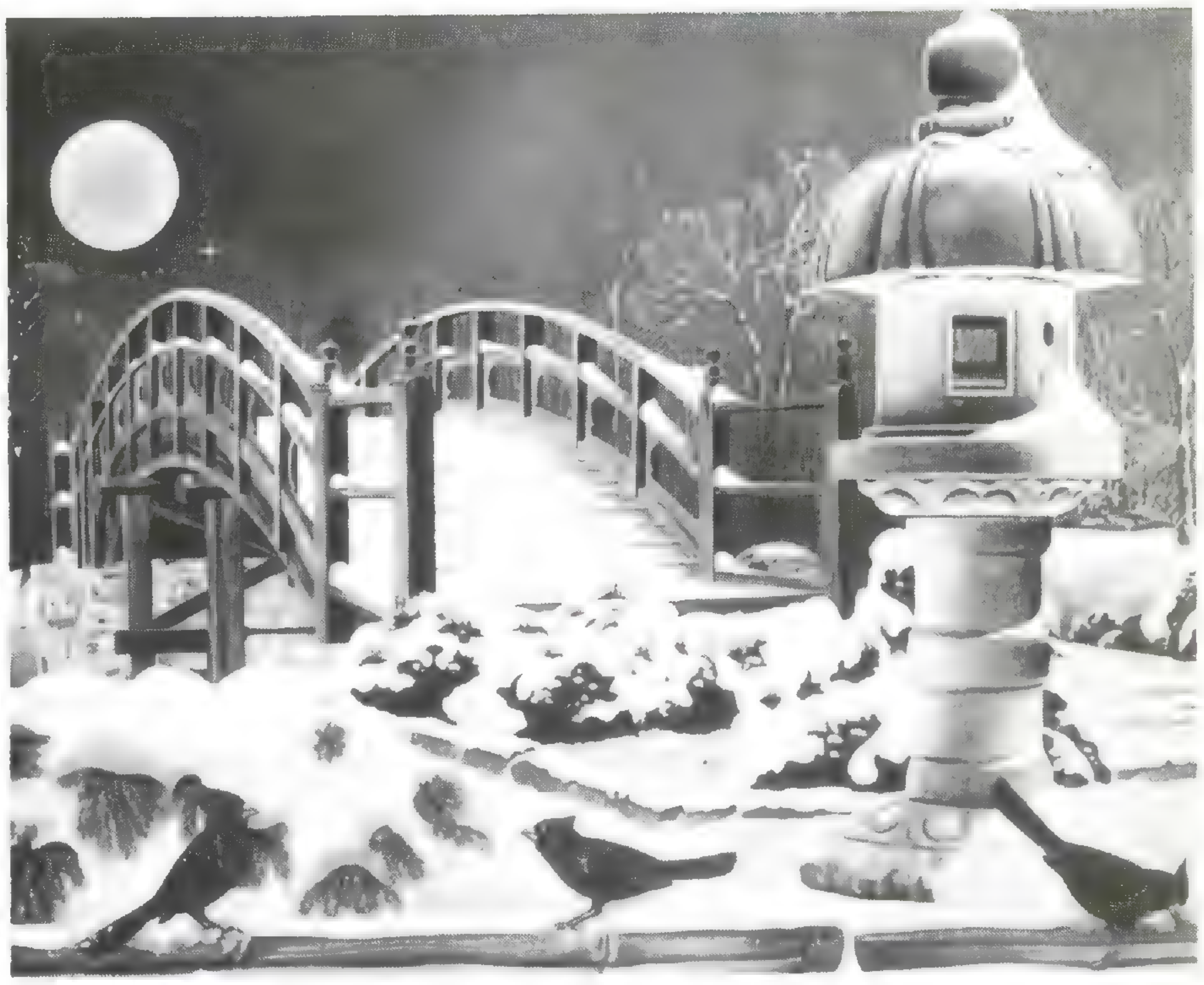
The additional funding will allow Dr. David Alan Neill, assistant curator, to study the plant life of areas adjacent to the Hollin-Loreto Road. The major purpose of the project is to provide Ecuador's forestry department with botanical information about tree species found in its Amazonian region. The information is essential for implementation of proper forestry protection and management.

Other goals of the project include establishing research grants for Ecuadorian professors and students, training local residents along the Hollin-Loreto Road in biological research methods, publishing a field guide identifying the trees native to eastern Ecuador, and establishing several permanent and protected plots of forest to allow for future studies.

USAID is a government organization devoted to the support of developing countries in their efforts to improve their standards of living. At present, USAID is actively involved in supporting activities related to the conservation and sustainable utilization of the biological diversity in tropical countries of the world.

Missouri Botanical Garden Calendar
1989

1989 Garden calendar



1988 Holiday card

From the Garden Gate Shop

Annual Fall Sale and Bulb Extravaganza

Members Preview: Thursday and Friday, September 8 and 9, 9:00 a.m. to 6:30 p.m.

Sale opens to the public: Saturday and Sunday, September 10 and 11, 9:00 a.m. to 5:00 p.m.

Members save 20 percent on all merchandise, all four days at the Shop's annual fall sale. Visit the Orthwein Floral Display Hall for a marvelous array of bulbs and hardy mums. Then come into the Shop for tropical plants, orchids, bromeliads, hanging baskets and bonsai, as well as a great selection of gifts, gardening accessories, tools, statuary and books. Plan now for a colorful spring garden!

Cards and Calendars

Holiday shoppers will be pleased to hear that Missouri Botanical Garden Christmas cards and 1989 calendars are on sale now in the Garden Gate Shop.

The 16 inch by 12 inch full-color calendar features 38 photographs by St. Louisan Jack Jennings. The calendar lists hundreds of historical facts about the Garden, St. Louis, botany and the United States. A color poster describing the Garden's research program in the tropics is included as well. Calendars are only $9.95 each, with the proceeds benefiting the Garden.

The card features a holiday view of the Japanese Garden created by St. Louis artist Dhimitri Zonia. Cards can be purchased with no message or with the wording, "Peace and Joy in the New Year." A package of 10 Garden holiday cards and envelopes are $9.95.

1989 Calendar Order Form

Please send me __________ Missouri Botanical Garden Calendars at $9.95 each (plus $2.00 postage and handling).

NAME ______________________

ADDRESS ______________________

CITY ________ STATE ________ ZIP ________

TELEPHONE ______________________

☐ Enclosed is my check for $____________.
Payable to: Missouri Botanical Garden

☐ Please charge:
VISA/MC No. ______________________

Expiration date ______________________
Name as it appears on card:
____

Mail to: Missouri Botanical Garden
Garden Gate Shop
P.O. Box 299, St. Louis, MO 63166

Raven Research Receives NSF Grant

Dr. Peter H. Raven, director of the Garden, has received a grant from the National Science Foundation for a project titled "Systematic and Evolutionary Studies in the plant family Onagraceae." The $75,253 award is effective to October 31, 1989, and is the last installment of a three-year grant of $213,445 issued in 1986.

The grant supports a long-term study of the Onagraceae (evening primrose family), a family of almost 700 species that includes such favorite ornamentals as *Fuchsia*. The objectives of the project are to complete a thorough systematic revision of the entire family, to develop Onagraceae as a model for evolutionary studies, and to use the knowledge of the patterns of variation in the family to evaluate additional characteristics and techniques.

Raven has researched the Onagraceae for 30 years and, with the collaboration of numerous colleagues worldwide, has made it the most thoroughly studied plant family of its size. The information Raven has helped compile is used regularly as a model for understanding patterns and processes of plant evolution in general.

Raven is supported on the project by Garden assistant curators Dr. Peter C. Hoch and Dr. Elsa Zardini.

Raven Receives Allerton Award

Dr. Peter H. Raven, director of the Garden, is the recipient of the 1987 Robert Allerton Award for Excellence in Tropical Botany. He received the award from the Pacific Tropical Botanical Garden in Lawai, Kauai, Hawaii. The Allerton Award is given biennially and is named to honor one of the garden's founding trustees and its principle benefactor. The Pacific Tropical Botanical Garden was chartered by Act of Congress on August 19, 1964 as a non-profit corporation. It is a scientific research and education center for tropical botany and horticulture.

Tributes

MAY-JUNE 1988

In Honor Of:

Dr. and Mrs. Oliver Abel III
Dr. and Mrs. Charles Abel
Mr. and Mrs. Michael G. Walther

Ms. Elaine Alexander
M.I. Students Class of 1993

Mrs. Ben Alper
Mrs. Ruth Schwartz

Mr. H. F. Baer
Mr. and Mrs. David R. Townsend

Mr. Clark Barrett
Mr. and Mrs. Charles J. Cook

Mr. and Mrs. G. Duncan Bauman
Mr. and Mrs. Howard F. Baer
Mr. and Mrs. William E. Kaufman
Mr. and Mrs. Donald O. Schnuck

Lee and Torry Berger and Family
Mr. and Mrs. Ralph A. Herzmark

Mr. and Mrs. Howard T. Bland
Mr. and Mrs. Andrew H. Baur

Mrs. Peter Brandt
Mrs. David N. Grosberg
Mrs. Ernest D. Loewenwarter

Mr. and Mrs. Saul Brodsky
Mr. and Mrs. Lester R. Adelson

Mr. and Mrs. Steve Chilton
Mr. and Mrs. John B. Henkle
Ms. Dolores A. Miller

Ms. Leslie Conway
Mr. and Mrs. James L. Spehr

Mr. and Mrs. William H. Crandall
Mr. and Mrs. C. Peyton Daniel

Mr. and Mrs. John L. Dorrell, Jr.
Mary E. Chapman
Marjory Wozniak

Miss Robin Dunlap
Mr. and Mrs. John O. Felker
Mr. and Mrs. Oliver W. Hickel, Jr.

Mr. and Mrs. Clifford Fischer
Mr. and Mrs. Henry A. Jubel
Mr. and Mrs. Albert H. Oehler

Mrs. Teresa M. Fischer
Mr. and Mrs. Clay Mollman

Tom and Emily Friedman
Mr. and Mrs. Charles J. Francis, Jr.

Dr. Robert Gillespie
Mrs. Esther Myrick

Mr. Marvin B. Goldman
Mr. and Mrs. Herbert M. Talcoff

Mr. and Mrs. Sid Goldman
Mr. and Mrs. Allan Kofsky

Mr. Peter Guarraia
Fred and Louise Goldberg

Mr. and Mrs. Charles G. Hirt
Mr. and Mrs. David F. Orwig

Mr. Peter Hochschild
Mr. and Mrs. Roland J. Ditmeyer
Dr. and Mrs. David Goldring
Mr. and Mrs. Fritz Mann
Dr. and Mrs. Gerald T. Perkoff

Mrs. Melvine Hyken
Mrs. Sylvia I. Shapiro

Mr. Jack Jennings
Medical Mission Sisters Association

Mrs. Ellen Jones
Mr. and Mrs. Stephen D. Mitchell

Mr. and Mrs. Henry Jubel
Mr. and Mrs. Wayne Bennetsen
Mr. and Mrs. Erwin R. Breihan
Mr. and Mrs. Raymond C. Jaudes

Mr. and Mrs. Leonard Kaufman
Mr. and Mrs. Milton J. Canis
Mrs. Ruth Schwartz

Mrs. Richard A. Klein
Mr. and Mrs. Richard B. Rosenthal

Miss Ann Elizabeth Kresko
Mrs. Raoul Pantaleoni
Mr. and Mrs. W. Todd Terry, Jr.

Mr. and Mrs. Jerry Lapp
Mr. and Mrs. Melroy B. Hutnick

Mr. J. Marshall Magner
Miss Elizabeth Goltermann
Mr. and Mrs. John W. Weingaertner

Mr. and Mrs. Clarence Mange
Mr. and Mrs. Charles J. Cook

James McCaskill
Missouri Walk-Ways Association, Inc.

Louise Robinson McReynolds
Her Family

Mr. and Mrs. Robert Murphy
Mrs. Kenneth W. Grattendick

Mrs. Thomas F. Neher
Dr. and Mrs. Anthony R. Montebello

Mrs. Joseph H. Ogura
Mr. and Mrs. Peter Hochschild

Dick Proctor
Mr. and Mrs. Howard J. Siegel

Francis Raven
Mr. and Mrs. Alexander Schonwald

Dr. Peter H. Raven
Saint Louis Country Day School
Mr. and Mrs. Alexander Schonwald

Mrs. Tamra Raven
Mrs. Henry L. Freund

Mr. Oscar Rexford
Mr. and Mrs. Howard F. Baer

Mrs. Lois Ross
Mr. and Mrs. Lester R. Adelson

Mrs. Luciana Gladney Ross
Dr. and Mrs. Austin F. Montgomery

Mr. and Mrs. Ed Ruesing
Mr. and Mrs. Michael D. Wolf

Mary and Charles M. Ruprecht
Mr. and Mrs. James A. Singer

Mr. Tom Schweizer
Mr. and Mrs. Bert Schweizer

Dr. and Mrs. Richard Shaw
Mr. and Mrs. Frederick Drain, Jr.

Mrs. Geraldine Silberman
Mr. and Mrs. Jerome M. Steiner

Mr. James A. Singer
Mr. and Mrs. James E. Schiele

Mr. John Sink
Mr. and Mrs. Marc Seldin
Mr. and Mrs. Robert A. Smith

Mrs. Mitzi Sisson
Marilyn and Arnold Goldman

Dr. John S. Skinner
Mr. and Mrs. Ralph E. Piper
(The tribute in honor of Dr. Skinner was incorrectly listed under Memorials in the last issue. We regret the error.)

Mrs. Alma Smith
Dr. and Mrs. Herluf G. Lund

Mrs. Selma Soule
Mrs. Ruth Schwartz

Prof. Sondra Stang
Bernetta Jackson

State of Israel 40th Anniversary
St. Louis Chapter Hadassah

Mrs. Malcolm Steiner
Mrs. Agnes F. Baer

Mr. James Thompson
Mr. and Mrs. Ralph A. Herzmark

Mr. and Mrs. Edward Turner
Mr. and Mrs. Melvin S. Strassner

Carol Unger and Jack Koepernik
Dr. and Mrs. Leslie Rich

Dr. and Mrs. Vernon Wehmueller
Marye F. Parsons

Amanda and Matthew White
Mr. and Mrs. Richard Halpern

Mr. and Mrs. Francis Wielandy
Mr. and Mrs. Carl F. Kottmeier

Prof. Robert Wiltenburg
Mrs. Bernetta Jackson

Mr. and Mrs. Lyle Woodcock
Ms. Mary Amey
Mrs. Robert Baird
Mr. George Bechtold
Mrs. Margaret Bender
Mr. Paul G. Benignus
Mrs. Nellie Bernhardt
Mrs. De Lee Bigham
Mr. and Mrs. James K. Bigham
Mr. and Mrs. Howard L. Blevins
Mr. and Mrs. Richard C. Bockrath
Mr. and Mrs. Allan P. Brandewiede
Mr. and Mrs. Raymond L. Breun
Mrs. Ruth Brewster
Mrs. William M. Bridwell
Mrs. Ruth Browne
Mr. and Mrs. R.E. Burlis
Ms. Rosemary Burtelow
Mr. and Mrs. Vernon Burtner
Mr. L. Vernon Caine
Ms. Agnes M. Cantalin
Mr. and Mrs. Max Carlisle
Ms. Irene Carper
Ms. Mildred Carper
Mr. and Mrs. Wallace Crow
Rene Curry
Mr. and Mrs. William Dadek
Mr. and Mrs. Conrad Damsgaard
Mr. and Mrs. Lloyd Dixon
Mr. and Mrs. Richard W. Ebel
Mr. and Mrs. Steven W. Ebel
Mr. and Mrs. Orville Ellis
Mrs. Corinne Emmendorfer
Mr. and Mrs. James Endicott
Mr. and Mrs. Philip M. Eppler
Mr. and Mrs. William Filbert
Mr. and Mrs. Robert K. Follansbee
Mr. and Mrs. Nick Giebels
Mr. Joseph C. Giedeman
Mr. and Mrs. Alfred E. Goldman
Mr. and Mrs. Sidney Goldstein
Ms. Lucille Grady
Mr. and Mrs. Aubrey J. Greenberg
Ms. Esther Guenther
Iris V. Habermaas
Mr. and Mrs. Alfred M. Hammers
Ms. Juanita Heiland
Ms. Shelley Heiland
Mrs. G. G. Hertslet
Mrs. Claude E. Hightower
Mrs. Marian R. Hogenkamp
Mr. Glen E. Holt
Mr. and Mrs. H. H. Hutsell
Jefferson Bank and Trust
Mr. and Mrs. Cleland Juenger
Mr. George C. Key and Family
Mr. George E. Key
Mr. and Mrs. Richard C. Kohm
Mr. and Mrs. Wm. J. Krieger
Mr. and Mrs. August H. Lamack
Mr. and Mrs. Kenneth A. Lamack
Sandy Lucy
Mr. and Mrs. Russell Mason
Mr. J. H. McConnell
Mr. and Mrs. John M. McIlroy
Mr. and Mrs. George Mehan
Mr. John L. Mentz
Mr. Fred Meyer
Mr. and Mrs. Reuben M. Morriss III
Mr. Donald Mundinger
Mr. John F. Norwood
Mr. and Mrs. Fred A. Oberheide
Betsy O'Herin
Mr. and Mrs. Wayne Paceley
Mr. and Mrs. Garrett Palmer
Mr. and Mrs. W. V. Palmer
Edwin Paradoski
Mr. and Mrs. Ward S. Parker
Mrs. Marlin Perkins
Mr. and Mrs. Ed Pohrer
Mr. and Mrs. James B. Price
Dr. and Mrs. John D. Radke
Ms. Lorraine M. Raster
Ms. Genevieve Renner
Dr. and Mrs. Leslie Rich
Ms. Judith A. Rinesmith
Mr. and Mrs. Emil Royco
Mr. and Mrs. Edward Ruder
Mr. and Mrs. Gerald Ryan
Mr. and Mrs. Roy H. Sander
Mrs. Alma L. Schaller
Mr. and Mrs. Charles A. Schraudenbach
Mr. and Mrs. Herbert Schuppan
Mr. and Mrs. Neil Shanahan
Mr. and Mrs. Max P. Shelton
Mr. William P. Sherman
Mrs. Marie E. Sims
Ms. Marie M. Waddell
Mr. Franklin F. Wallis
Jane A. Ward
Margaret Warden
Mrs. Bess M. Weingartner
Mrs. William Wieland
Ms. Evelyn N. Woodcock
Ms. Helen Woodcock
Mr. and Mrs. Jerry Woodcock
Mr. and Mrs. Francis H. Zeller
Zodiac Birthday Club

Mr. and Mrs. Thomas S. Yates
Sr. Jane Hassett

Mr. and Mrs. Lee Zeve
Mrs. Matilda F. Canis
Mr. and Mrs. Gene Tischler

In Memory Of:

Mr. Arthur Altvater
Mr. and Mrs. Mike J. Todorovich

Mrs. Bobbie Amick
Ms. Vivian F. Powell

Mr. Gustaf Anderson
Ms. Lynn K. Silence

continued on next page

Tributes

continued

Harriet Rodes Bakewell
Mrs. J. H. Nash
Mrs. Jerome Barker
Mr. Jerome A. Gross
Mr. and Mrs. Henry C. Lowenhaupt
Mr. William Beezley
Miss Rita E. Nikonowicz
Mrs. Patricia Abbot Biby
Mrs. Bernice Hilgendorf
Mr. and Mrs. T. M. Nagie
Mrs. Ava Blake
Mr. and Mrs. Carl F. Ritchie
Mr. Edmund Boyce, Sr.
Mr. Harry Wuertenbaecher, Jr.
Miss Muriel Braeutigam
Miss Marilyn Heneghan
Ms. Jaclyn Meyer
Mrs. Geraldine Epp Smith
Mr. John P. Bufe
Mr. and Mrs. Sheldon H. Stock
Bob Christensen's Mother
Mr. and Mrs. Larry Feiss
Mr. George Clarkson
Mr. and Mrs. David J. McKay III
Mildred Clinger
Mrs. Edward P. Zawadzki
Mrs. Lena Cobb
Mr. and Mrs. J. Harold Matthew
Mrs. Dorothy Mumford Coleman
Ms. Virginia McDonald
Mr. Herbert Condie, Jr.
Mr. and Mrs. Joseph H. Bascom
Mrs. James Barrett Brown
Mr. and Mrs. Henry Hitchcock
Mr. and Mrs. Robert E. Kresko
Mrs. Whitelaw Terry
Mr. Donald Coursey, Sr.
Stephen P. Mullin Family
Mr. Alfred Crancer, Sr.
Mr. and Mrs. Ed Bellamy
Joyce, Don and Tasha Crancer
Mr. and Mrs. Michael Crancer.
Mr. and Mrs. Buford Eubanks
Family and Friends
Ken, Thelma and Christine Hanks
Mr. and Mrs. Charles J. Haywood
Mr. and Mrs. J. Hollis
Mrs. F. J. Manganaro
Lena Marlar
Mr. and Mrs. Robert Smith
Whitson-King, Inc.
Miss Kathleen A. Cronin
Mrs. Edward J. Robson
Mrs. Eugene Cronk
Mr. and Mrs. Edmonstone F. Thompson
Mrs. Morton Werner
Mr. Harry Wuertenbaecher, Jr.
Mrs. Rosemary Cupp
Mrs. Eugenia Fish
Mr. Ted Decker
Mr. and Mrs. Charles J. Cook
Mr. Bernie Lee Dickie
Mr. and Mrs. Ralph M. Schaefer
Mrs. Dorothy Dixon
Mrs. Ben H. Senturia
Mrs. Mollie Drane
Mr. Henry T. Drane
Mr. John M. Dressel
Mr. Ferdinand B. Zienty
Mr. Roy E. Dyer
Mr. and Mrs. Reginald Wells and Daughter
Mr. Samuel H. Edelmann
Mr. and Mrs. Ron Ressler
Mr. Harry A. Edelstein
Mr. and Mrs. Merlyn M. Hoffman
Mr. James D. Edgar
Emmanuel Nursery School
Mr. and Mrs. Travis Hammer, Jr.
Ms. Anne LaMonte
Dr. and Mrs. Timothy J. Towers
Carl Erhard
Mr. and Mrs. Leon E. Ruh, Jr.
Mr. Howard A. Estabrook
Mrs. Kathryn M. Morgan
Mrs. Ida Fancher
Mr. and Mrs. Edward W. Garnholz
Charles F. Fields
Mr. and Mrs. Hugo Brueggenjohann
CWA-Local 6320
Mr. and Mrs. Hal Franks
Mrs. Margaret Higgins
Internal Revenue Service, Taxpayer Service Division
Mr. and Mrs. Charles Mikusch
Mr. and Mrs. Harold Richmann
Mr. and Mrs. William S. Snodgrass
Southwestern Bell Publications
Mr. and Mrs. Erv Vlasak
Mr. and Mrs. Arthur Wallace
Mr. and Mrs. Donald Weingart
Mr. John Patrick Flanagan
Mr. David S. Schlamb
Mr. William Forrest
Mrs. Dorothy Dwyer
Mr. Dick Foster
Mr. and Mrs. Jere Hochman
Thelma Gilbreath
Miss Patricia R. Williamson
Mrs. Ella Ginsberg
Mrs. Sylvia I. Shapiro
Mr. Alan Godlewski
American Association of Museums
Simon and Monica Barker
Ms. Judith Bellos
Mr. Franklin Brooks
Mrs. Calvin Christy
Mrs. Edwin R. Culver, Jr.
Environmental Planning and Design
Mr. and Mrs. Harry N. D. Fisher
Mrs. Henry L. Freund
Mrs. Margaret Glenn
Mr. and Mrs. John C. Heisler
Miss Cecily Hoffius
Dr. and Mrs. August H. Homeyer
Mr. and Mrs. Seaton Hunter
Dr. and Mrs. David M. Kipnis
Dr. and Mrs. Sherman J. LeMaster
Jeanne McGilligan
Missouri Botanical Garden—Board of Trustees
Missouri Botanical Garden—Volunteers/Instructors
Mrs. S. F. Morris
Mr. and Mrs. William R. Orthwein, Jr.
Mr. and Mrs. James Simons
Mr. Franklin F. Wallis
Mrs. Pauline Goetz
Mr. and Mrs. George R. Bakker, Jr.
Maude Street Gordon
Mrs. J. H. Nash
Mr. Arthur Grossman
Mr. and Mrs. Seymour Feinstein
Helen J. Hadley
Mr. and Mrs. Glenn W. Smith
Sonny Hahs
Ora Hahs Dickemann
Mrs. Betty Handkins
Mrs. Charles Bramstedt
Mrs. Ida Browning
Mrs. Viola G. Harford
Four Seasons Garden Club
Mr. Robert S. Hatch
Mrs. Anne M. Anderson
Mrs. Katherine H. Hedley
Mrs. E. B. Murer
Mrs. Viola Heibert
Dr. and Mrs. David M. Kipnis
Mrs. A. C. Schuchardt
Mr. Walter W. Heimbuecher
Mr. and Mrs. Peter Hochschild
Mr. Frank P. Hendrickson
Mr. and Mrs. George R. Bakker, Jr.
Mr. and Mrs. Warren Glickert
Dr. Morris Herman
Mr. and Mrs. Melvin Gerwiner
Lois Holmes
Jane Brown
Mark Govoni and Family
Mrs. Marcella Holtzman
Henry Hennessey Family
Jen Phelan and Family
Col. (Ret.) Daniel H. Hundley
Mrs. Joseph W. Boyle
Mr. and Mrs. Robert H. Davidson
Mr. and Mrs. Elmer G. Kiefer
"J.P."
Mr. and Mrs. D. Goodrich Gamble
Mrs. Jacobs
Ms. Janice F. Putnam
Ray Jaegert's Mother
Miss Margaret Joyce
Dr. Joseph C. Jaudon
The Quigley Family
Erma Karst
Frontenac Garden Club
Mrs. Rose A. Kaufman
Mr. and Mrs. Frank O. Bittner III
Mrs. Florence Koehler
Mrs. Ross B. Luitjens, Jr.
Mrs. Melva Korn
Rock Hill Garden Club #1
Miss Imogene Krietemeyer
Mr. and Mrs. William S. Harrenstein
Carla Lange
Mrs. J. H. Nash
Mr. Luke Lanwermeyer
Mr. and Mrs. Vincent A. Brencick
Mrs. Dorothy Rosenbaum Laser
Dr. Kenneth D. Laser
Mr. John S. Rupes
Mr. Edward Lee
Mr. and Mrs. Charles W. Freeman
Mrs. Janet Leslie
Mrs. Robert A. Humber
Mr. Harry Wuertenbaecher, Jr.
Mr. Kenneth C. Lever
Mr. and Mrs. Ferd L. Bopp
Mr. Harry Lydick
Mr. and Mrs. Dick Archer
Mr. Thomas Lydon
Mr. and Mrs. Kurt Spieler
Mrs. Walter S. Mahoney
Mr. and Mrs. Roy E. Harvey
Mr. Leon D. Marks
Mrs. Dwight W. Coultas
Mr. Ralph Marotta
Mrs. Ruth E. Scott
Mr. J. Harold Matthew
Mrs. Roy S. Hettick
Mr. and Mrs. Charles Tomlinson
Dr. Layton Mauze, Jr.
Mr. and Mrs. Robert E. Kresko
Mr. Harry Wuertenbaecher, Jr.
Charles W. McAlpin
Mr. and Mrs. William H. Engelsmann
Mr. and Mrs. Charles W. Freeman
Mr. and Mrs. Richard C. Holton
Mrs. Tom E. McCary
Mr. and Mrs. Howard U. Wilson
Mr. A. J. McCoy
Mr. and Mrs. Gerard Andert
Mrs. McDowell
Mr. Lawrence P. Badler
Miss Irene McElroy
Mr. and Mrs. W. O. McConnell
Mr. Hugh McPheeters, Jr.
Frances F. McPheeters
Mr. and Mrs. James W. Metcalfe
Ellen Menut
Mrs. Nellie S. Ferguson
Miss Virginia Meredith
Mrs. Tom E. McCary
Mr. Stanley Mitchell
Mr. and Mrs. Richard T. Grote
Mr. and Mrs. Paul T. Putzel
Mr. and Mrs. Alexander Schonwald
Mrs. Elise Morton
Mrs. Dwight W. Coultas
James H. Nash
Mrs. J. H. Nash
Mrs. Beverly Barnes O'Hare
Sandy, Jeanne, Steve, Diana, Mark and Sally Cortopassi
Arlie Wolter
Eva Olinsky
Mr. and Mrs. Richard J. Pandorf
Mrs. Jane Parks-Clifford
Mr. and Mrs. Harvey Citerman
Mr. and Mrs. Lawrence H. Davis
Mrs. Eileen K. Eckert
Mr. Bruce L. Liles
Joseph Martinich
Judith S. Middlebrook
Mr. and Mrs. E. B. Murray
Vicki L. Sauter
Mayor and Mrs. Vincent C. Schoemehl, Jr.
The New City School, 5th Grade Class
Mr. and Mrs. James E. Tierney
Mr. and Mrs. Joseph Tucker
Mrs. Jane Russell Pence
Mrs. Carolyn B. Pratt
Suzey Pepple
Mr. and Mrs. Pete Berndt

Mr. Alexander Timon Primm III
Mr. and Mrs. James G. Alfring
Mr. and Mrs. Howard F Baer
Mrs. Alexander M. Bakewell
Mr. Edward L. Bakewell III
Mr. and Mrs. Joseph H. Bascom
Mr. and Mrs. Andrew H. Baur
Mrs. William Bixby, Jr.
Mrs. Jean-Jacques Carnal
Dr. and Mrs. James T. Chamness
Mrs. Dwight W. Coultas
Mr. and Mrs. H. Harrison Culver
Mr. and Mrs. Tom S. Eakin, Jr.
Joan Esposito
Mr. and Mrs. John Gardner
Mr. and Mrs. W. Ashley Gray, Jr.
Mrs. James H. Grove
Mr. and Mrs. George H. Hall
Mr. and Mrs. Philip Hall
Mr. and Mrs. Henry Hitchcock
Mrs. Stella B. Houghton
Mr. and Mrs. James H. Howe III
Mr. and Mrs. T. Frank James, Jr.
Mr. and Mrs. Landon Y. Jones
Mrs. Sears Lehmann, Jr.
Mrs. William M. Love
Mr. and Mrs. Henry N. McCluney
Mrs. H. Leighton Morrill
Mr. and Mrs. Charles W. Oertli
Mr. and Mrs. Edward L. O'Neill
Mr. and Mrs. William R. Orthwein, Jr.
Mrs. Raoul Pantaleoni
Mr. and Mrs. W. Anderson Payne
Selwyn Pepper
Mrs. Walter F. Raven
Mrs. Patricia Rich
Mr. and Mrs. Edwin G. Russell
Mr. and Mrs. Daniel L. Schlafly
Ms. Eleanor L. Schlafly
Mr. and Mrs. Henry T. Schlapp
Dr. and Mrs. Henry G. Schwartz
Mr. and Mrs. Warren M. Shapleigh
Mr. Robert A. K. Smith
The Boatmen's National Bank of St. Louis—Officers and Directors
The Guaranty Trust Company of Missouri
Mrs. John C. Tobin
Mr. Harry Wuertenbaecher, Jr.

Mr. David M. Pynchon
Mrs. Raoul Pantaleoni

Mrs. Maria Ravarino
Mr. James M. Canavan, Jr.

Jean Russell Redhage
Ms. Jean Hudson
Pat Payton

Mr. Samuel Ribaudo, Sr.
Mr. and Mrs. Paul J. Shaver

Mr. Robert Robson, Jr.
Rick Halpern
Cory Hartung

Eileen Roehr
Mr. Edward O. Roehr

Mr. Lester Roemer
Mr. and Mrs. Michael P. Fogarty

Mrs. Carrie Thelma Routt
Ms. Doris D. Billmeyer
Mrs. Hilda Boyer
Ms. E. J. Burge
Ms. R. J. Geis
Mr. and Mrs. Michael C. Prochko
Mr. and Mrs. Elmer N. Stuetzer
Miss Laura J. Stuetzer
Ms. Martha B. Stuetzer

Mrs. A. P. Rowlette
Dr. and Mrs. Henry G. Schwartz

Mr. Carl Runge
Miss Margaret Joyce

Mr. Nelson Russell
Mr. and Mrs. F. Scott Mathews

Mrs. Lillian Sableman
Mr. and Mrs. Fred Bouchein

Mrs. Louise Schmelzle
Mr. and Mrs. Ralph Casey, Jr.

Mr. A. Wessell Shapleigh, Jr.
Mrs. Alexander M. Bakewell
Mr. and Mrs. H. Harrison Culver
Mr. and Mrs. Tom S. Eakin, Jr.
The Boatmen's National Bank of St. Louis—Officers and Directors

Mrs. Georgine Silhavy
Miss Helen E. Sheppard

Mr. Jim Simons
Mrs. Morris Suchart

Mrs. Anne Smyser
Mr. and Mrs. Carl Strauss
Ms. Tessa Tilden-Smith

Mrs. Emma Spiesman
Mrs. Myrtle G. Weinrobe

Mr. Lawrence Spring
Mr. and Mrs. Donald W. Leber

Mr. Ronnie Spring
Mr. and Mrs. Donald W. Leber

Mrs. Kathryn Stenzhorn
Mr. and Mrs. Milton E. Robinson

Mrs. Josephine F. Stephens
Mr. and Mrs. Tom S. Eakin, Jr.
The Boatmen's National Bank of St. Louis—Officers and Directors

Mr. Charles Stewart
Mr. and Mrs. Andy Chirchirillo
Mr. Frederick Giraud
Mr. and Mrs. Charles Gouaux
Cathy Johnson
Mrs. Kathy Maryan
Ilene Wittels

Mrs. Luevenia Casey Stewart
George S. Tucker
Jeffrey T. Tucker
John H. Ward
Ollie Tucker Ward

Mrs. Florence Stocker
Mrs. Helen M. Hyer

Mr. Wayne Stumpf
Mr. and Mrs. Roy W. Stumpf

Alphonse Sur
Mr. Don Dotzauer

Mrs. Elizabeth Swan
Harry G. Gerding Family

Mr. John E. Taylor
Mrs. James C. Travilla

Elizabeth Tillman
Mr. and Mrs. Harold N. Kravin

Patrick Tynan
Dr. and Mrs. Peter H. Raven

Olga Ekaitis Uram
Miss Thelma Meaux
Mr. John D. Philips
Mr. and Mrs. Christopher M. Smith
E. Robin Smith
Edythe Meaux Smith

Mimi Urban
Mary Kibler

Mr. Harry J. Viesselman
Sue and Toshi Doi

Mr. Corwin von Brecht
Leland M. Bower
Hal Doolittle
Bob Haury
Mrs. J. Edgar Lumpkin
M. W. Kellogg Company—Instrument Control Systems and Advanced Process Control Groups
Mr. David T. McMullan
National Aviation Underwriters
Miss Julia F. Nouss
Mr. and Mrs. Robert A. K. Smith

Mrs. Virgil Voorhees
Ms. Janet K. Powell

Mr. Derald Wallace
Mr. and Mrs. Robert D. Rich

Mr. and Mrs. Chas. Wallerstedt
Mrs. Louis A. Eberhardt

Mrs. Shirley Wallerstein
Dr. and Mrs. Ronald D. Gersten

Mrs. Vera D. Wavering
Dr. and Mrs. Stephen F. Bowen, Jr.

Mrs. Marion Hutchins Weber
Mr. and Mrs. Harold T. Jolley, Jr.
Mrs. Walter L. Metcalfe, Sr.
Mrs. Harriet Spoehrer
Mrs. Fred Wulfing

Mr. and Mrs. John Wenzel
Steve Arnold
Mr. and Mrs. Donald D. Brandt
Mr. and Mrs. Richard S. Brzenk
Mr. and Mrs. Jim Buersmeyer
Mr. and Mrs. David Giffin
Mr. and Mrs. Richard C. Goldman
Mr. and Mrs. Milton D. King
Mrs. Anita Lantz
Mr. and Mrs. Robert Lawton
Wayne Lee
Mr. and Mrs. Jack McEwing
Mr. and Mrs. Anthony J. Micale, Jr.
Mr. and Mrs. Kemeth E. 0sbourn
Mr. and Mrs. Doug Price
Ms. Barbara Radtke
Ms. Judith E. Reedy
Mr. and Mrs. Jack Rogers
Mrs. Rosemary Shadwick
Mr. and Mrs. Thomas Stone
Ms. Carol Stukey
Mr. and Mrs. Gary Zide

Raymond and Dorotha Whitnah
Valeria Blair
Kaye L. Whitnah

Mrs. Victoria Wisney
Dr. Janet D. Collins
Dr. Lloyd R. Collins

Mr. Reinhardt Wobus
Mr. and Mrs. Hubert C. Moog

Mr. Robert Woods
Mr. and Mrs. Malcolm Holekamp

Matthew Bohr Woolsey
Roseann Weiss

Mrs. Elsie Yule
Mr. and Mrs. Robert E. Power

Mr. Herbert W. Ziercher
Mrs. William H. Leyhe, Jr.
Mr. and Mrs. John Roos

Mrs. Al Zink
Mr. and Mrs. Harold Lewin

Board of Trustees

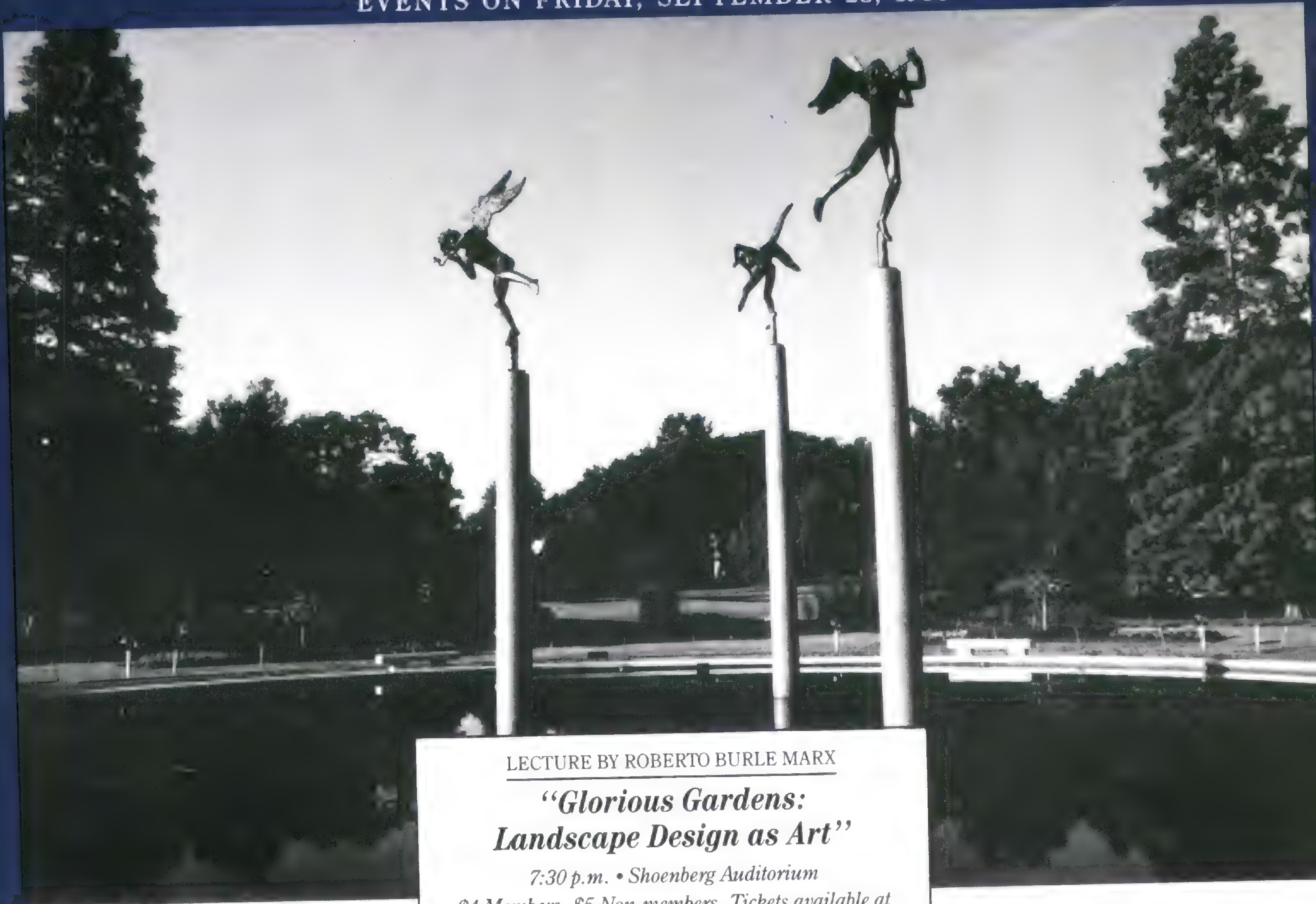
Mr. John H. Biggs
President
Mr. Joseph H. Bascom
Rev. Lawrence Biondi, S.J.
Mr. Gerald D. Blatherwick
Mr. Stephen F. Brauer
Mr. William H. T. Bush
Mr. Jules D. Campbell
Dr. William H. Danforth
Mr. Robert R. Hermann
Rt. Rev. William A. Jones, Jr.
Mr. David W. Kemper
Mr. Charles F. Knight
Mr. Robert E. Kresko
Mr. William E. Maritz
Mr. James S. McDonnell III
Mr. Lucius B. Morse III
Mrs. Fred A. Oberheide
Mr. William R. Orthwein, Jr.
Mrs. Vernon W. Piper
Mrs. Lucianna Gladney Ross
Dr. Howard A. Schneiderman
The Hon. Vincent C. Schoemehl, Jr.
Mr. Sydney M. Shoenberg, Jr.
Mr. C. C. Johnson Spink
Mrs. Walter G. Stern
Dr. Joyce M. Thomas
Mr. John K. Wallace, Jr.
Mr. O. Sage Wightman III

EMERITUS TRUSTEES
Mr. Howard F. Baer
Mr. Clarence C. Barksdale
Mr. Sam'l C. Davis
Dr. Thomas S. Hall
Mr. Henry Hitchcock
Mrs. Anne L. Lehmann
Mr. Joseph F. Ruwitch
Mr. Louis S. Sachs
Mr. Daniel L. Schlafly
Mr. Warren M. Shapleigh
Mr. Robert Brookings Smith
Mr. Tom K. Smith, Jr.
Mrs. Harriet Spoehrer
Mr. Harry E. Wuertenbaecher, Jr.

MEMBERS' BOARD
Mrs. Henry W. Dubinsky
President
Mrs. Rudyard K. Rapp
First vice president
Ms. Elaine A. Alexander
Second vice president
Mrs. Robert P. Elsperman
Secretary
Mr. Frederick H. Atwood III
Treasurer

DIRECTOR
Dr. Peter H. Raven

EVENTS ON FRIDAY, SEPTEMBER 23, 1988



MEMBERS' SCULPTURE WALK

5:00 p.m. to 7:00 p.m.
Meet on Spoehrer Plaza
(PLEASE NOTE: This date has been changed from September 15.)

Join us for a special fall tour with the Garden Guides. This is the first tour of sculpture at the Garden to feature the newly-installed bronzes by Carl Milles. Enjoy them in their spectacular setting in the pools facing Flora Gate, surrounded by the enchanting beauty of the waterlilies. *Cash bar and light refreshments available.*

LECTURE BY ROBERTO BURLE MARX

"Glorious Gardens: Landscape Design as Art"

7:30 p.m. • Shoenberg Auditorium
$4 Members, $5 Non-members. Tickets available at ticket counter starting Monday, September 19, or at the door. Seating is limited.

A lecture by Roberto Burle Marx, the celebrated Brazilian landscape architect, painter and botanist. Mr. Marx calls garden design "painting with plants." He composes landscaping with an exuberant sense of romance and creative spirit, drawing inspiration from music, painting and sculpture.

Mr. Marx is the recipient of many prestigious awards, including the 1983 Albert P. and Blanche Y. Greensfelder Medal of the Missouri Botanical Garden, and the 1985 Medal Award from the American Society of Landscape Architects. The ASLA award stated: "few individuals have equaled his stature as a twentieth century Renaissance man with the design profession."

JUST PUBLISHED

Sculpture at the Missouri Botanical Garden

By George McCue
$5.95
Available September 23.

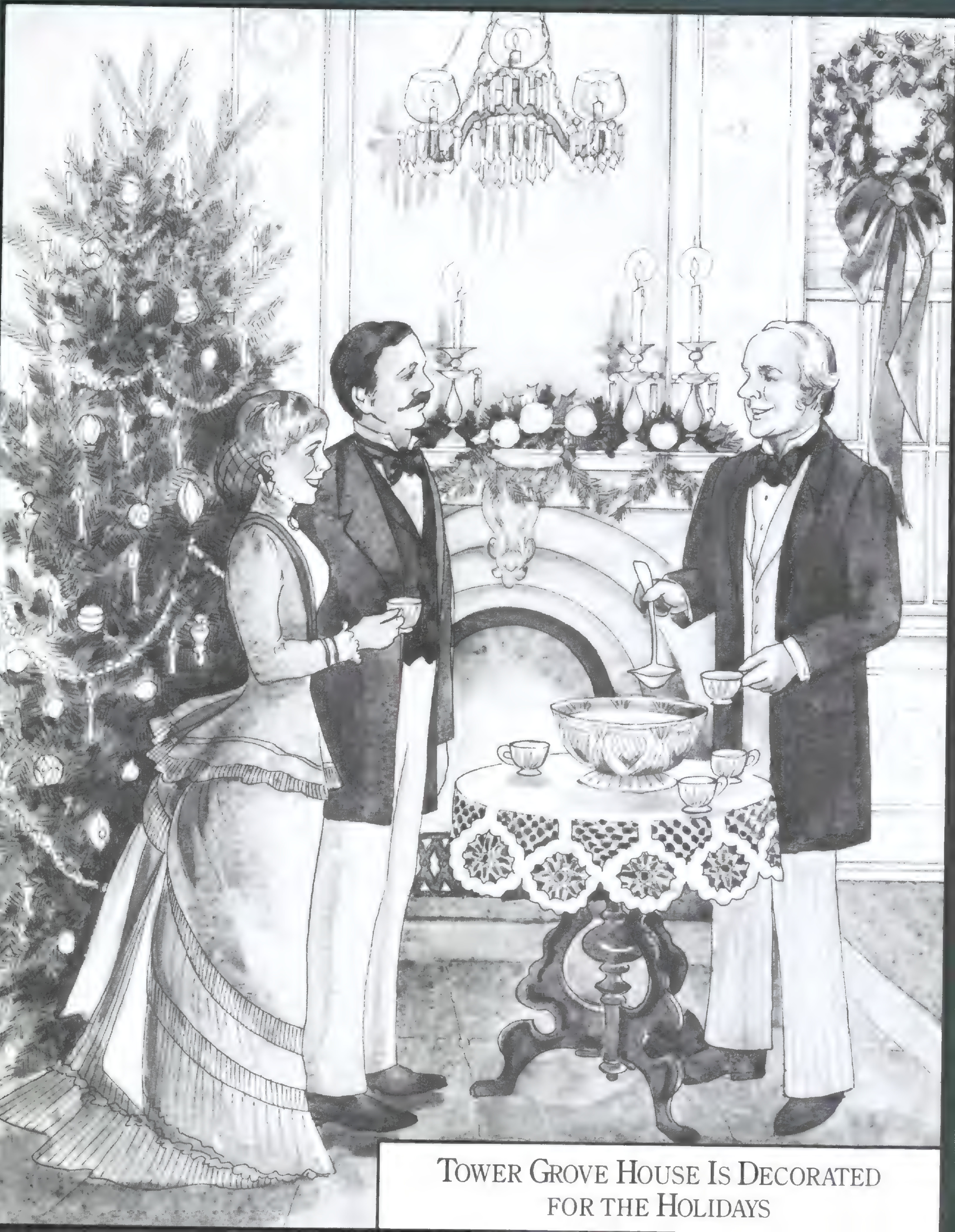
A comprehensive catalogue and history of sculpture at the Garden. Includes artists' biographies, plus interpretation and photographs of each work of art. 48 pages.

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
P.O. Box 299
Saint Louis, Missouri 63166

SECOND CLASS
POSTAGE
PAID
AT ST. LOUIS, M

Missouri Botanical Garden Bulletin

NOVEMBER / DECEMBER 1988



TOWER GROVE HOUSE IS DECORATED FOR THE HOLIDAYS

VOLUME LXXVI
NUMBER SIX

Inside This Issue

4 Research News
Nine botanists from Latin America are studying at the Garden this year.

5 Flora of China
A landmark project with the People's Republic of China is announced.

6 Graduate Education Program
Cooperation with local universities has created a world-class program in systematic botany.

8 Home Gardening
Now is the time to take care of maintenance chores and plant spring bulbs.

9 Gardening at the Garden
Native trees of Missouri are studied, propagated and protected.

10 Ask the Answer Service
Cold-weather gardening tips, house plants, Christmas trees and terrariums.

11 Tower Grove Park
Henry Shaw's vision created one of the finest Victorian park landscapes in the United States.

14 Calendar of Events
The holidays bring the return of our popular flower shows, plus parties, carolers, candlelight tours, and a visit from Santa.

16 From the Membership Office
The Members' Travel Program offers three marvelous trips for 1989.

20 For Younger Members
Projects for sight, taste and smell.

© 1988 Missouri Botanical Garden.

The BULLETIN (ISSN 0026-6507) is published bi-monthly by the Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, MO 63110. Second class postage paid at St. Louis, MO. Subscription price $12.00 per year. $15.00 foreign.

The BULLETIN is sent to every Member of the Garden as one of the benefits of membership. For a contribution of as little as $35 per year, Members also are entitled to: free admission to the Garden, Shaw Arboretum, and Tower Grove House; invitations to special events and receptions; announcements of all lectures and classes; discounts in the Garden Gate Shop and for course fees; and the opportunity to travel, domestic and abroad, with other Members. For information, please call (314) 577-5100.

Postmaster: send address changes to Susan Wooleyhan, editor, BULLETIN, P.O. Box 299, St. Louis, MO 63166.

Comment

Accomplishments and New Beginnings

November marks the reopening of our traditional flower shows. Colorful chrysanthemums highlight the Fall show in November, and festive poinsettias accent the Holiday Fantasy show in December.

Less than a year ago, we were in the final stages of completing the first part of the capital campaign—the three new greenhouse ranges. Today, those greenhouses are in full use with increased capability for plant propagation and production. The chrysanthemums and poinsettias decorating the flower shows were some of the first plants produced in our improved facilities.

Looking toward year end, we are reminded of past accomplishments and successes we achieved by working together to improve our facilities and programs, thus assuring that the Missouri Botanical Garden remains a premier institution in each of its areas of concentration.

Throughout 1988, we have taken advantage of new opportunities. We offered a well-rounded exhibit program; a new Fragrance Festival attracted superb publicity and attendance; educational programs and lectures brought increased numbers of children and adults to the Garden; and we refurbished and replanted the lily pools area and installed the seven bronze figures by Swedish sculptor Carl Milles. The Climatron exterior renovation is nearing completion and the interior renovation will begin soon.

Without the assistance of a committed, vital and active membership, the Garden could not maintain or expand these services and opportunities provided to hundreds of thousands of people each year. Your continued involvement serves to strengthen the entire Garden.

The Trustees and staff are grateful for all you have done and encourage you to spend time at the Garden enjoying the programs your support has helped to provide. Happy Holidays!

Peter H. Raven

FANNIE MAY CANDIES FOUNDATION RECOGNIZED: **Peter Raven (far left) and John Biggs (far right) with Fannie May executives (from left to right) Jean D. Thorne, John E. Hughes and Richard M. Peritz at the reception recognizing the Coleman/Fannie May Candies Foundation, Inc. for the support it provides to the St. Louis community, especially the Japanese Festival. Fannie May has served as the Japanese Festival sponsor since 1986.**

The CAMPAIGN for the Garden

A Strong Start

UPDATE: The Garden's $16 million dollar fundraising campaign moves into its second year on the strength of a new record in contributions from private donors. As of September 15, 1988 more than $12,635,000 had been received in gifts and pledges.

"WE are off to a strong start," said Robert E. Kresko, Chairman of the Campaign Steering Committee. "But we still have to meet a fundraising challenge for the Climatron from The Kresge Foundation, complete the funding for the other four campaign components, and reach our $16 million final goal. We have a tough road ahead."

The Campaign for the Garden was publicly launched in the spring of 1987. In the year since, a total of $10 million was raised, the largest amount ever received by the Garden in a fundraising drive. Several significant gifts received early in the campaign, from four of the top Civic Progress firms and Mrs. Harriet Spoehrer, a Trustee of the Garden, provided a solid base for the drive's successful momentum. The Campaign is scheduled to be completed by December 31, 1990.

Kresko noted, "The first year's results show that the Garden has garnered support throughout the St. Louis area." Dr. Peter Raven added, "We are extremely grateful for all the support we have received thus far because it translates into new services that we can provide for Members and visitors."

The Kresge Foundation challenge involves a grant of $650,000 intended to stimulate remaining gifts needed to renovate the Climatron, a $6.4 million project and the largest single component of the drive in dollar terms. Payment of the award is contingent upon the Garden raising these remaining funds by August 1, 1989. Thus far, $5.3 million has been given or pledged to the Climatron, leaving a balance of $1.1 million. The following list recognizes donors who have designated gifts of all sizes to this project for use in meeting The Kresge Foundation's challenge.

HISTORY BEING MADE: The first pane of thermal glass is installed in the Climatron dome. The reglazing is the first phase of the structure's complete renovation, anticipated to take 18 months.

DESIGNATED SUPPORT FOR THE CLIMATRON RENOVATION PROJECT
through August 31, 1988

We thank the following donors who have generously provided support in meeting The Kresge Foundation's challenge grant to the Climatron restoration project:

Dr. and Mrs. Morris Abrams
Dr. Helen M. Aff-Drum
Mr. Lowell Ahart
Mr. and Mrs. Alvin A. Ahrens
Mr. Walter Alber
Dr. and Mrs. Morris Alex
Miss Jessica A. Alford
Ms. Gladys Watkins Allen
Dr. and Mrs. Thomas W. Allen
Dr. and Mrs. David H. Alpers
Alvey Inc.
Ms. Nancy A. Amelung
Mr. and Mrs. Anthony P. Anderhub
Mrs. Ralph Appel
Mr. and Mrs. Richard Archer
Mr. Norman W. Armbruster
Mr. and Mrs. Russell Ashton
Mrs. Newell A. Augur
Mr. and Mrs. Richard J. Augustine
Mr. and Mrs. Charles M. Babington III
Mr. Harold W. Bachman
Mr. and Mrs. Donald Bacon
Mr. and Mrs. Jacques U. Baenziger
Mrs. Helen K. Baer
Mr. and Mrs. Louis C. Bailey
Mrs. Hugh Baird
Mrs. Kenneth C. Baker
Mrs. Newell A. Baker
Mrs. Alexander M. Bakewell
Mr. and Mrs. Preston Bank
Mrs. Agnes Bardot
Mrs. Virginia Barnes
Mr. Joe N. Barnhill
Miss Caroline J. Barrere
Mr. and Mrs. M. W. Bartels Jr.
Ms. Pauline Bauche
Mr. Brian Bauer
Ms. Joan Bauman
Mrs. Florence N. Baur
Mr. and Mrs. Roger E. Beal
Mr. and Mrs. W. L. Beaver Jr.
Mr. and Mrs. Howard J. Beck
Miss Ann M. Becker
Mr. and Mrs. Frank V. Becklean Jr.
Mr. and Mrs. Roland C. Behrens
Mr. Henry Belz III
Mr. and Mrs. Scott Benson
Dr. Ralph Berg
Dr. and Mrs. Harry I. Berland
Mr. and Mrs. Brooks Bernhardt
Ms. Catherine J. Berra
Mr. and Mrs. Ralph J. Bettlach
Mr. and Mrs. Arthur Bierman
Mrs. Emil O. Birkner
Mr. George Bishop
Mrs. Robert C. Bleikamp
Miss Marion Bock
Miss Evelyn Boedicker

continued on page 12

Latin American Scientists Visit the Garden

Noyes and Tinker Foundations Support Garden Fellows

The Garden has established a program of postgraduate fellowships for Latin American scientists with the support of the Jessie Smith Noyes Foundation and the Tinker Foundation, Inc., both of New York City. The first four postgraduate fellows were recently announced. They come from Argentina, Panama, Mexico and Chile and will be at the Garden for periods ranging from one month to one year.

María Mercedes Arbo de Sarmiento is in St. Louis for six months as a Jessie Smith Noyes Foundation Fellow. She graduated from the Universidad Nacional del Nordeste, Corrientes, Argentina, in 1972, and has been a research scientist of the National Research Council of Argentina since 1975 and a professor of plant morphology at the University since 1983. Her research concentrates on completing treatments of the family Turneraceae for two important Garden projects: The Flora of the Venezuelan Guayana under the direction of Dr. Julian Steyermark, and the Flora Mesoamericana, under the direction of Dr. Gerrit Davidse.

Tania Béliz will be in St. Louis for 12 months starting January 1, 1989, as a Jessie Smith Noyes Foundation Fellow. She graduated from the University of Panamá in 1979 and received her Ph.D. from the University of California at Berkeley in 1986. Her research will concentrate on the treatment of *Cuscuta* for the Flora Mesoamericana under the direction of Dr. Gerritt Davidse.

Victor Rico-Gray graduated from the National University of Mexico in 1979, received a Master of Science degree from Tulane University in 1984 and a Ph.D. from the same university in 1987. He is currently a research scientist and a professor in the Master's program at the Instituto Nacional de Investigaciones sobre Recursos Bióticos (INIREB), Xalapa, Mexico. His research includes ecology of mangroves and ecological interactions. He was awarded the first Tinker Foundation Fellowship to carry out herbarium and library work connected with his teaching and research activities in Mexico, in consultation with various specialists at the Garden.

Roberto Rodríguez graduated from the University of Concepción, Chile, in 1970, and received his doctoral degree (Dr. rer. nat.) from Ludwig-Maximilians-Universität, Munich, Germany, in 1986. He is currently a professor at the University of Concepción. He is a leading expert in the ferns and fern allies of Chile, the Pteridophyta. The University of Concepción, in cooperation with the Missouri Botanical Garden and other institutions, has recently initiated a program to prepare a new Flora of Chile, and Dr. Rodríguez is working on the treatments of the ferns for the Flora. He was awarded a Tinker Foundation Fellowship that allowed him to consult the Garden herbarium and library and to consult with the Garden specialist, Dr. Robbin Moran.

Shown in the Garden's Herbarium, from left to right: Victor Rico-Gray, María Mercedes Arbo de Sarmiento, Aurelio Schinini, Gracielza dos Santos, Nelson Zamora, and Mónica Palacios-Ríos. Not pictured: Hermes Cuadros, Tania Béliz, and Roberto Rodríguez.

Other Visiting Fellows

The Garden has for many years maintained an active program of visiting fellowships for young Latin American and African scientists and has also provided space and research facilities for scientists supported from other sources. Five Latin Americans are working with us this year for periods ranging from one month to one year. They come from Colombia, Mexico, Costa Rica, Brazil and Argentina.

Hermes Cuadros graduated from the Universidad del Valle, Cali, Colombia in 1977 and received a Master of Science degree from the Universidad Nacional, Bogotá, Colombia in 1988. He is currently Director of Research at the "Guillermo Piñeres" Botanical Garden, Cartagena, Colombia. His research includes the taxonomy of the palm genus *Acrocomia*. In St. Louis during the month of October he carried out Herbarium and library research on the Flora de Bolívar (Colombia) in consultation with various specialists at the Garden.

Mónica Palacios-Ríos graduated with a Bachelor's degree from the Universidad Autónoma Metropolitana-Iztapalapa, Mexico, in 1982 and is currently finishing her Master's degree at the Instituto Nacional de Investigaciones sobre Recursos Bióticos, Xalapa, Mexico. She is a specialist in the taxonomy of tropical ferns and is working on an annotated check list of the ferns of the State of Veracruz. She was in St. Louis for one month this fall as a guest of the Garden. Her research concentrated on treatments of the fern genera *Spheropteris* and *Oleandra* and of the Psilotaceae for the Flora Mesoamericana project, in consultation with Dr. Robbin Moran.

Nelson Zamora graduated with a degree in forestry engineering from the Universidad Nacional de Costa Rica in 1984. He currently teaches courses in dendrology and assists in forest ecology at the university's School of Environmental Sciences. He was supported here on travel funds from the Costa Rica Manual Flora project financed by the National Science Foundation. In St. Louis from September 1 to October 15, he prepared treatments of several woody legume genera in addition to the Capparaceae, Humiriaceae and Vochysiaceae for the Manual.

Gracielza Machado dos Santos graduated from the Faculdade de Ciências Agrarias, Pará, Brazil in 1987. She has been a research scientist at the Museu Paraense "Emilio Goeldi," Belém, Brazil, since January of 1988. Her field of research is the anatomy of woody tropical plants. She has been awarded a one-year training fellowship by Partners of the Americas and the U.S. Agency for International Development (USAID), and is doing graduate work at the University of Missouri-St. Louis while carrying out research at the Garden.

Aurelio Schinini is a native of Paraguay. He has been a research assistant of the National Research Council of Argentina since 1975. An active field botanist, he has gathered over 26,000 collection numbers during frequent expeditions in northern Argentina, Paraguay and Brazil, and is one of the most knowledgeable plant taxonomists of the flora of that region of South America. His six-month visit to St. Louis will allow him to complete an illustrated book on the trees of Asunción, Paraguay, as well as the treatment of the Bromeliaceae for the Flora of Paraguay and the annotated check list of the flora of the Northwest Chaco region. He is supported during his stay at the Garden by the Wildcat Farm Fund.

Shown at the ceremony to sign the agreement for the project are (seated): Dr. Peter H. Raven and Prof. Wu Zheng-yi; (standing, left to right): Dr. William Tai, Dr. David E. Boufford, Prof. Chen Xin-qi, Prof. Huang Cheng-jiu, Prof. Chen Shou-liang, and Dr. Bruce Bartholomew.

FLORA OF CHINA IS LANDMARK PROJECT

October 2—7, 1988, the Garden hosted the first joint meeting of the editorial committee for the *Conspectus Florae Sinicae* Project, a cooperative effort with the People's Republic of China. The Garden will serve as the U. S. activity center for the project, which will involve collaboration between many U. S. and Chinese botanists to produce the first modern synthesis of information on the plants of China. This bi-national effort is a landmark in Sino-American scientific exchange.

The editorial committee is headed by co-chairmen: Dr. Peter H. Raven, director of the Garden, and Prof. Wu Zheng-yi, honorary director of Kunming Institute of Botany, and includes six Chinese botanists. Dr. William Tai, formerly professor of cytogenetics at the University of Manitoba, has been hired by the Garden to coordinate the project.

Conspectus Florae Sinicae (CFS) will be a condensed revision and translation into English of the *Flora Reipublicae Popularis Sinicae* (FRPS), a comprehensive description of the 28,000 species that occur in China. The information from CFS will be entered into the Garden's computer database. Twelve to fifteen published volumes are planned for CFS, which is expected to be completed in about twelve years.

Collaboration between CFS and the Garden's Flora of North America project is particularly exciting. The two projects will share computer facilities and programs, allowing detailed study of the relationships of the two floras as well as analysis of the Chinese flora itself. Information on the plants of China is essential for study of the origins of our own North American flora, and collaboration between the two projects will make such study possible.

Edgar Denison Award to Missouri Students

The Garden recently announced the first recipients of the Edgar Denison Award. Mr. Denison is one of Missouri's most knowledgeable and enthusiastic botanists and conservationists and his spring wildflower walks at the Arboretum are a perennial favorite. He is the author of the popular guide, Missouri Wildflowers. Friends donated funds for the award in his honor. The award provides funds to students for botanical field work in Missouri.

The first three recipients are Young June Chang, a graduate student at the University of Missouri-Kansas City, who is studying the flora of the Osage Prairie in Vernon County; Yuki Gleason, an undergraduate at Northeast Missouri State University, who is studying the plants of Sullivan County; and Charlotte Zampini, a graduate student at Washington University, who is studying Missouri's native Jerusalem artichoke, *Helianthus tuberosus*.

GRADUATE EDUCATION AT THE GARDEN

A Collaborative Effort

J. Michael Fay observes lowland gorillas in the Central African Republic, studying how they live and especially what plants they eat. He ships crates of his specimens back to the Garden so they can be identified and added to our collections of the poorly known flora of that region. This may sound like a staff research project, but in fact Mike is a graduate student from Washington University, pursuing his studies under the auspices of the Garden. He is one of 17 students from Washington University, St. Louis University, University of Missouri-St. Louis, and Southern Illinois University at Edwardsville now at the Garden, and he follows a distinguished line of more than 310 botanists who have received degrees for work done at the Garden.

This productive relationship between the Garden and the universities of St. Louis began in 1885, when the Garden's founder, Henry Shaw, agreed to establish a school of botany at Washington University. Shaw stipulated that the director of the Garden be named the George Engelmann Professor of Botany at the university, and the post is currently held by Dr. Raven. Shaw's decision reflected the importance that he attached to research and education, an attitude that all subsequent directors have shared. The first graduate of the Henry Shaw School of Botany, A. Isabel Mulford, received her doctorate in 1895. In the course of the next 90-odd years, some 290 master's and doctoral degrees have been granted by Washington University to students in botany at the Garden. The Shaw School of Botany eventually merged into the present Department of Biology, and other disciplines have grown to prominence in the Department and in biology generally, but the close association remains, in which the University and the Garden share responsibility for the education and support of students in plant systematics and evolution.

Association with the other three universities has developed mostly in the past 20 years, especially with the establishment in the late 1960s of a consortium agreement among the five institutions to coordinate their efforts in graduate education in botany. Course offerings now are coordinated, and students from each university may take courses at the others as needed. Eleven Garden botanists currently serve as adjunct professors at one or more of the universities, and seven professors at the universities serve as research associates at the Garden. These Garden botanists advise students and direct dissertation research, serve on committees, and teach courses.

Students at the Garden are able to take full advantage of the Garden's world-class herbarium, magnificent library, and excellent laboratory and greenhouse facilities in their research. In addition, most students are able to pursue fieldwork within the extensive network of foreign institutions and botanists with which the Garden cooperates. Students now at the Garden have projects in much of South and Central America, west and central Africa, Madagascar, and North America. Other recent students have worked in east Asia and New Caldeonia.

Some students use the Garden's resources as a base for ecological or other types of studies, like Fay's work with gorilla feeding behavior, or a project by Donald Faber-Langendoen of St. Louis University on natural regeneration after clearcutting in tropical wet forests in the Chocó region of Colombia. These students work with ecologists, anthropologists, mathematicians and other biologists at the universities as part of their projects.

Other students are combining traditional systematic studies of plants with new techniques that utilize the most modern approaches from molecular biology. For example, while pursuing field and herbarium studies of pines in Mexico through Garden facilities, Jennifer Matos is studying the molecular genetics and evolution of the plants in the laboratory of Dr. Barbara Schaal at Washington University, using facilities not available at the Garden. Many students also use the scanning electron microscope facilities at the universities to study the fine structure of plants (see page seven). This sharing of resources among the universities and the Garden allows more efficient use of the increasingly expensive equipment needed in modern biology, and allows the Garden to concentrate its limited resources on the field-and collection-oriented research in which it excels.

The Garden has always included foreign students in its programs, but the accelerating disappearance of tropical forests and the critical need for well-trained indigenous botanists in tropical countries has given urgency to efforts to train more such students. The announcement in June 1988 of a new doctoral program in biology at the University of Missouri-St. Louis with emphasis in plant systematics and environmental biology, and a campaign to recruit students from tropical countries into the program, are exciting new developments in this effort.

The increasing costs of graduate education, stipend support, and research present new challenges to the Garden's program, although generous support has come from alumni of Washington University and friends of the Garden (including the Susie T. Bovard Trust, Mr. and Mrs. Emmet J. Layton, the family of the late Elizabeth A. Baltzer, Ms. Beatrice Stegeman, and the Littmann Scholarship Fund established by the Harry and Flora D. Freund Memorial Foundation). Many recent students have successfully sought research funding from the National Science Foundation, and from private organizations like the Garden Club of America/World Wildlife Fund, the Roger Tory Peterson Foundation, and the Sigma Xi Society. However, growing costs limit the number of students who can be admitted, especially from tropical countries.

Despite the challenges and expense, the graduate program at the Garden remains an integral part of its scientific research program, just as Henry Shaw envisioned it when he established his school more than 100 years ago. Although the graduate program is virtually unknown to the general public, it is one of the most highly regarded programs in the study of systematic botany in the world.

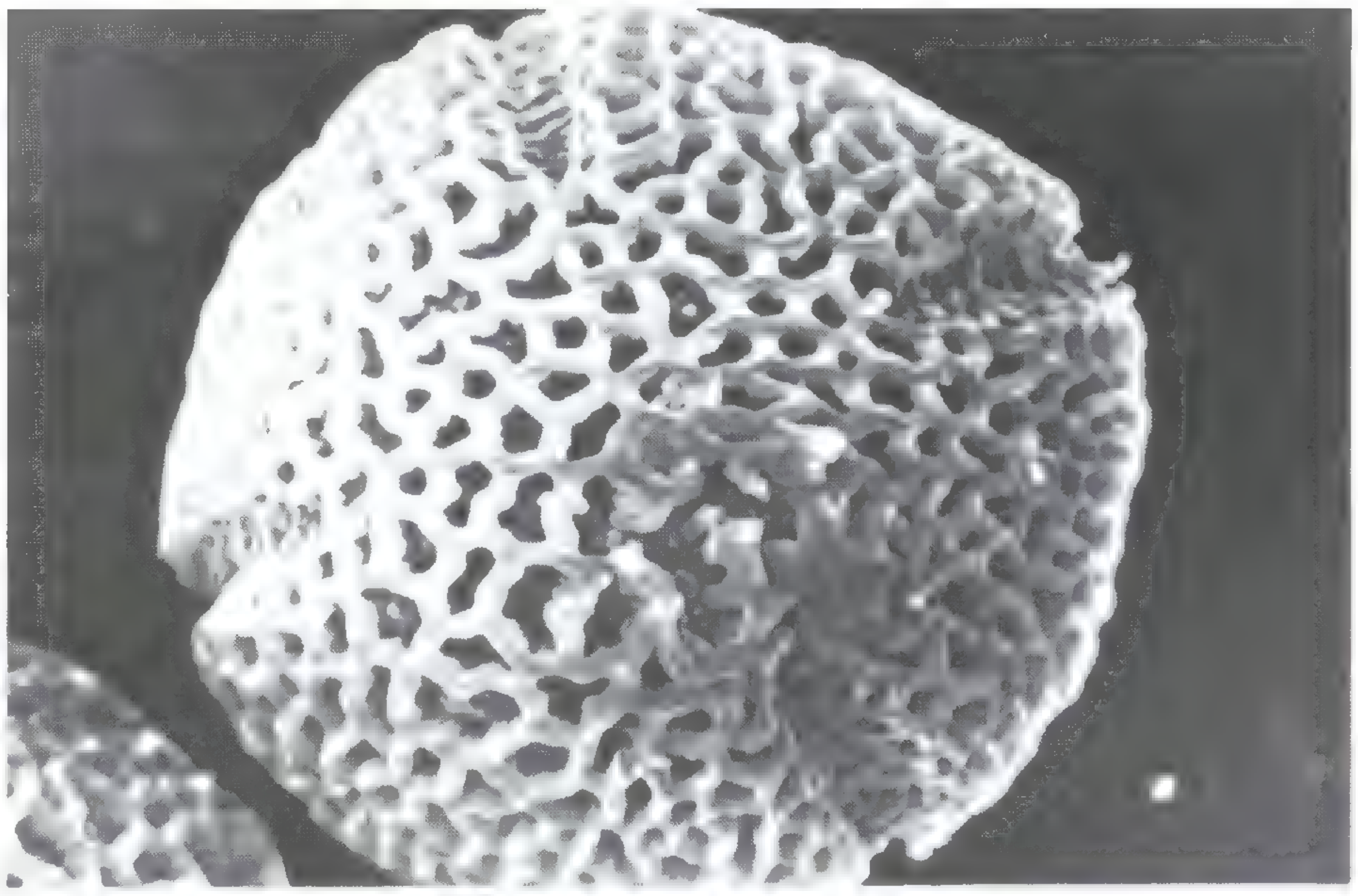
—Peter Hoch, Ph.D.

Peter Hoch is an associate curator at the Garden, and coordinator of the graduate program.

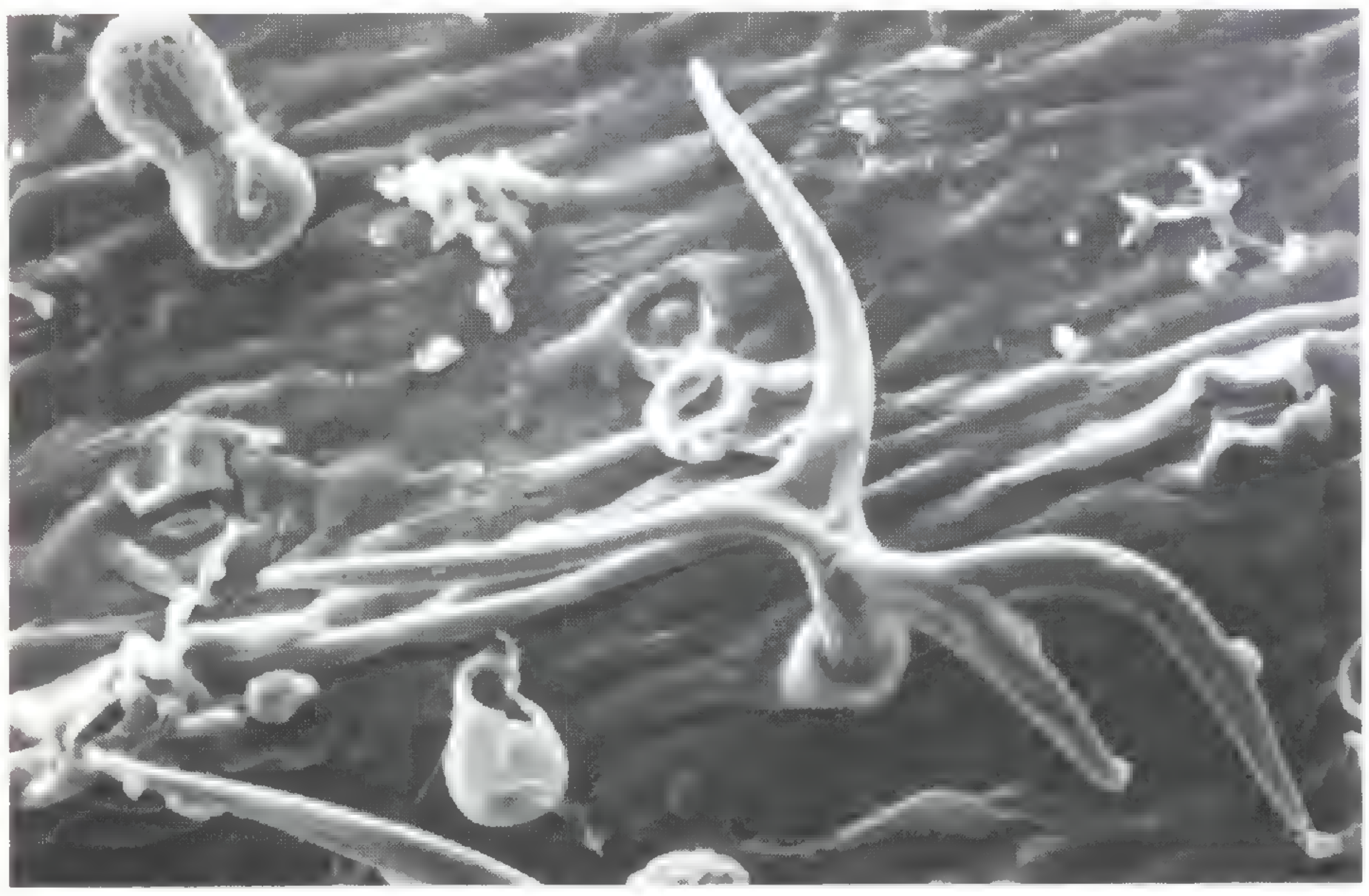
Electron Microscope Aids Garden Researchers

One of the most photogenic types of research carried out by Garden graduate students and staff involves the scanning electron microscope, which opens the microsopic window on the tiniest plant parts. Differing from conventional microscopes by using beams of electrons rather than light, electron microscopes achieve enormous magnifications and sharp clarity. Transmission electron microscopes show images of thin sections traversed by the beam, and scanning electron microscopes show surface views, often of whole objects. All of the pictures on this page were photographed on the scanning electron microscope. The Garden uses the scope at Washington University. The images, which appear on a screen much like a television screen, are informative, fascinating, and sometimes beautiful.

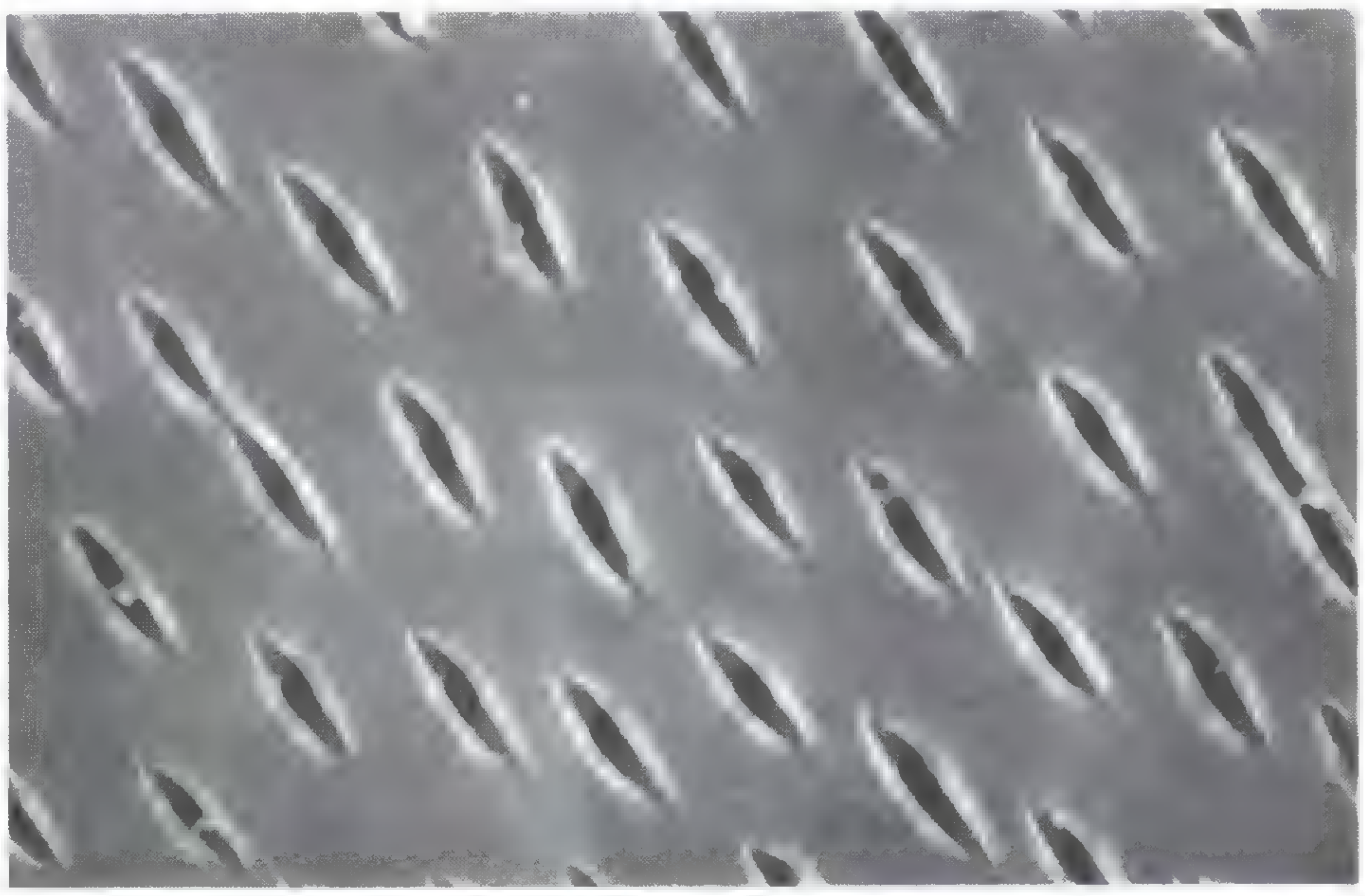
—George Rogers, Ph.D.



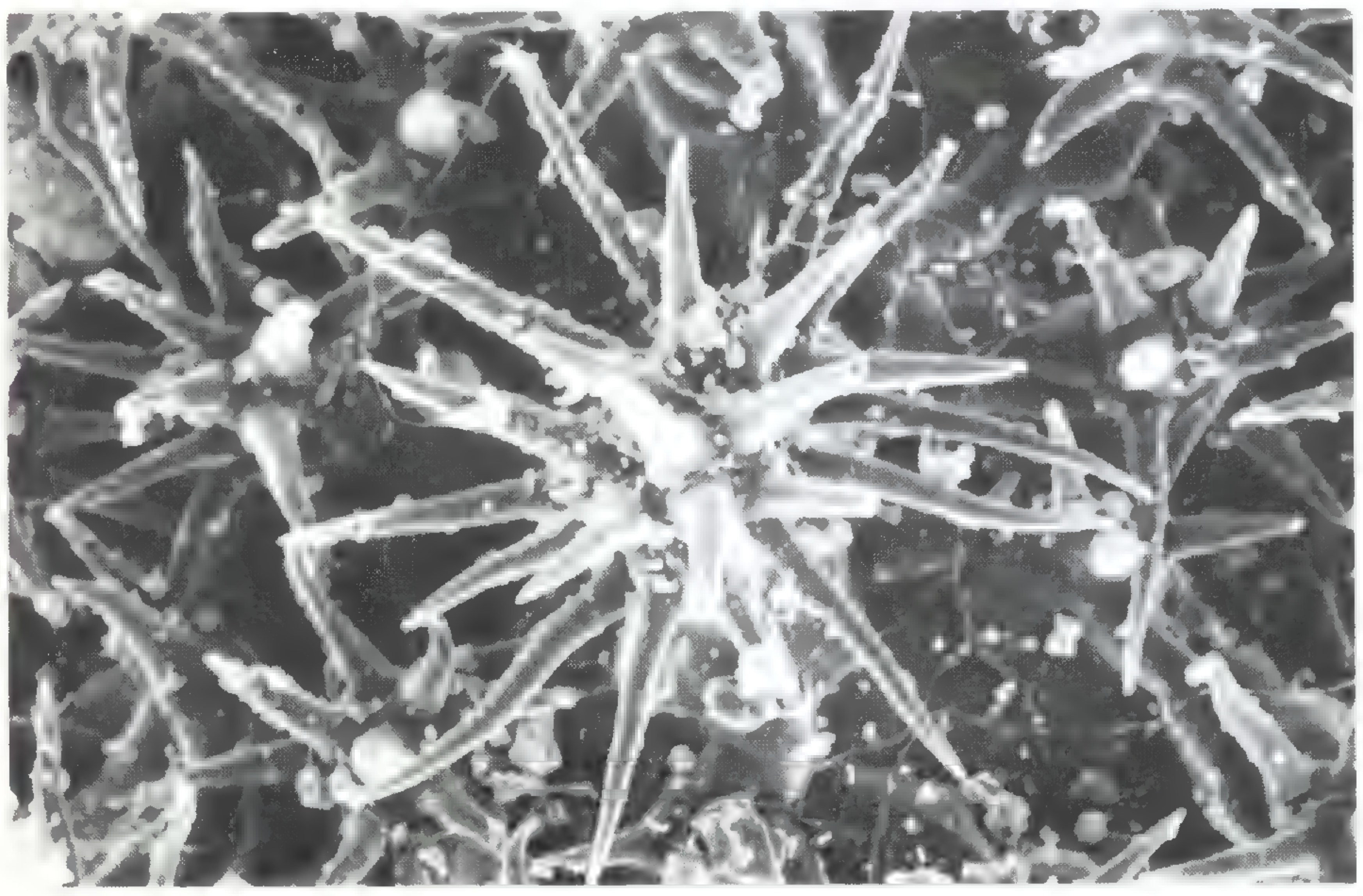
The greatest contribution of the scanning electron microscope to plant classification has been revealing the fine structures of pollen grains. The cavities covering the surface of this grain, when fresh, contained proteins involved in recognition between the grain and the stigma where it is deposited. (The stigma is the part of a flower receptive to pollen as the first step in the sexual cycle. It is disadvantageous for the stigma to be receptive to pollen of the wrong species.) The furrows are potential sites of emergence for the "pollen tube," which delivers a sperm to the egg. *(Magnified 1,400 times.)*



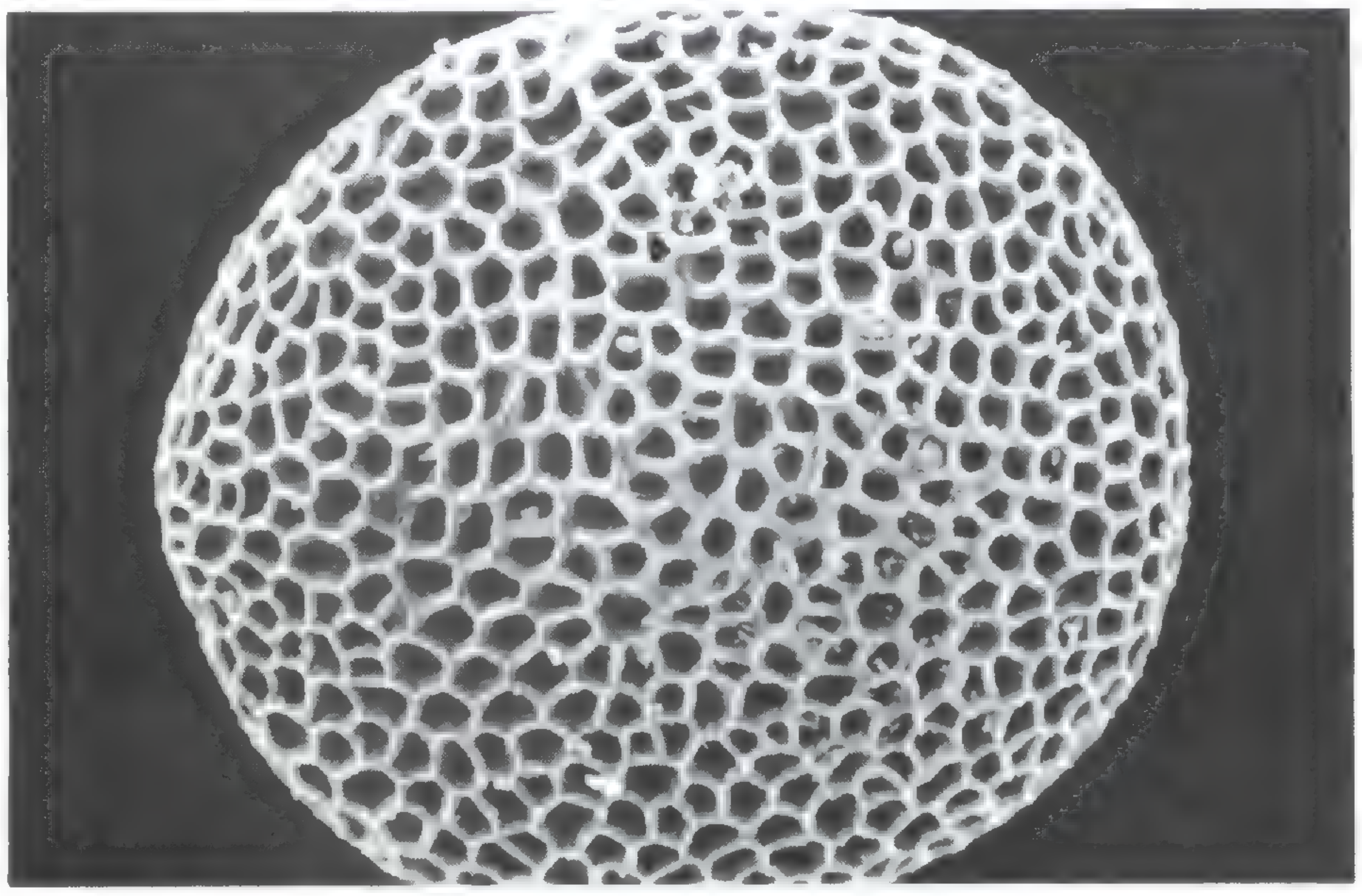
The branched, antlerlike structures and the "peanut" at the upper left are "hairs" on a leaf. Although they probably minimize drying or discourage nibbling, their exact functions are not certain. *(Magnified 300 times.)*



Somewhat like humans, plants have veins. Within such a vein, this is the view looking outward from the inside of a pipe-shaped, vertical, water-conducting cell. The tilted openings are known as pits and allow lateral passage of water from cell to cell. *(Magnified 5,000 times.)*



These unfriendly star-shaped "hairs" turned up on another leaf. *(Magnified 200 times.)*



While this may look like a close-up of one of Jupiter's moons, it is a seed. Patterns on seed surfaces are variable and can help in classifying plants. *(Magnified 200 times.)*

H·O·M·E GARDENING

MAINTAINING YOUR EQUIPMENT

As you store your equipment for the winter, make sure it will be ready to use next spring. Ideally, garden tools should be cleaned each time they are used, as soil is far easier to remove when it is moist and fresh. A wooden paint stirring stick is ideal for scraping dirt off tools.

Scrape off the soil, wipe the tool with a clean rag, then apply a protective coat of light oil. Ordinary floor wax or grease also are serviceable coatings for the blades of shovels and hoes. If you are faced with hard, caked-on soil, wash it off with a damp cloth or a kerosene-soaked rag. Use steel wool to remove any rust, and oil the tool as described above. In addition to your digging tools, remember to clean and oil the blades of lawn mowers, shears, tillers and loppers.

Make sure all of your gardening tools are sharp before putting them away for the year. Spades and hoes can be sharpened with a file. Other equipment often can be taken apart and sharpened with a grindstone, or you may prefer to use a sharpening service. Saws generally require expert attention.

Today, many pruning shears are manufactured so that they must be thrown away if the blades can no longer be sharpened or if a part breaks. Thrifty gardeners will be pleased to know there are still some shears, however, that offer replaceable parts. These are easy to repair, for a fraction of the cost a new pair. (Felco pruners, which are available at the Garden Gate Shop, have replaceable parts.)

Pull out the manufacturers' instructions on lawn mowers and any other power equipment you own, and do recommended maintenance now. Before doing any work on motorized equipment, be sure to follow all of the manufacturers' recommended safety precautions to be sure the engine doesn't start unexpectedly.

All motorized garden equipment will benefit from a thorough end-of-season cleaning. Use a clean rag or a stiff brush, and take special care to clean dirt and grease from engine cooling fins or air-intake screens. Make certain that vent holes in fuel tank caps are not clogged. Remove rust with steel wool. Oil and sharpen tiller and mower blades as described above.

Gasoline remaining in engines over the winter will turn gummy and make engines difficult to start next year. For two-cycle engines, close the fuel line and let the motor run until it stops, then add stabilizer to the gas left in the tank (follow label directions). If you have a four-cycle engine, just add the stabilizer to the gas tank and change the oil.

Examine drive belts to see if they are stretched or worn, check battery fluid levels, and replace or clean all filters. It's also a good idea to grease and lubricate according to manufacturers' directions. Remove the spark plug, spray the cylinder with a kerosene-based preservative, and put the plug back in. Test to see that all screws, bolts and nuts are tightened. Cover power equipment with plastic to protect it from dust and dampness. Store tillers so that sharp tines are protected.

PLANTING FOR EARLY SPRING COLOR

In November there is still time to plant early-blooming bulbs. Crocuses and early daffodils offer a delightful variety of color that will brighten up your garden several weeks before other spring blooms appear.

Plant spring bulbs in a sunny or lightly shaded location. They prefer rich, well-drained soil, and will not do well in wet clay. Add plenty of organic matter and sand or grit to clay soils to improve drainage before planting. For best results, prepare the soil to a depth of about six inches. Plant crocuses and the Cyclamineus daffodils about four inches deep. Both can be left undisturbed for many years without dividing. Do not cut back the foliage after flowering. It must be allowed to mature and die back naturally if the plants are to store energy for the winter and bloom the following year.

BULBS COLLECTED IN THE WILD

Contrary to what you may think, many spring bulbs are dug by the thousands in the wild and packaged by importers in Holland or in the U.S. for sale around the world. According to experts at the National Resources Defense Council, this trade is threatening wild populations of many species.

Fortunately, most spring bulbs—daffodils, tulips, crocuses and grape hyacinths—are propagated rather than collected. Plants with cultivar names ('Blue Pearl' or 'King Alfred', for example) and those identified as hybrids generally are not collected. However, many of the so-called "little bulbs," such as snowdrops, as well as some species bulbs, are destructively removed from the wild.

Gardeners who don't want to contribute to this trade should avoid purchasing the following species if they cannot determine with certainty that the stock was not wild-collected: *Chionodoxa sardensis* and *Chionodoxa luciliae*, commonly called glory-of-the snow; *Eranthus hyemalis* and *E. cilicia*, both called winter aconite; *Galanthus elwesii*, or snowdrop; *Leucojum aestivum*, or snowflake; the squills *Scilla siberica* and *S. tubergeniana;* and *Narcissus triandrus* var. *albus* and *N. tazetta*.

SEASONAL REMINDERS

Winter Drought Although the long, hot, dry summer is over, drought-damaged plants still need help recovering from this record-breaking summer. Water all landscape plants deeply before the ground freezes. A watering lance attached to a hose and stuck into the ground at intervals throughout the root zone will reduce runoff and ensure that moisture penetrates dry, compacted soil. Be certain to water the entire area beneath trees. A light application of a slow-release fertilizer, such as well-rotted manure, will encourage root growth, improving the drought tolerance of trees and shrubs. Quick-release fertilizer would burn roots already damaged by drought.

Weakened trees and shrubs are especially susceptible to invasion by insects and diseases, so take preventive measures to eliminate future problems. Prune away any dead or dying branches.

Ready, Set, Go Late fall is an excellent time to till and replenish vegetable garden beds to prepare for spring planting of cold-loving vegetables such as peas, lettuce, and spinach. Till compost or peat into the beds; add sand if your soil tends to be sticky and wet in the spring. Getting the beds ready now means you can plant seeds first thing in spring.

—Barbara Ellis

Gardening at the Garden

The Newest Trees at the Garden

Roy Cummings (left) and David Wright transplanting young Missouri native trees.

The plants exhibited at the Missouri Botanical Garden provide a delightful and informative display. Beyond this, they serve as horticultural tests, educational subjects, sources of materials for research or horticultural projects, and backups for dwindling wild populations. Each of these functions benefits from replenishing the living collection starting with well-documented seeds or cuttings taken from the wild.

Explaining the desirability of such sources involves clarifying two points. First, cultivated plants are often the results of artificial selection or complex breeding programs. They generally have vague histories; some are hybrids of unclear parentage and/or have genetic complements highly modified from their wild ancestors. Many are sterile or yield unpredictable, varied offspring from seed. For these reasons, cultivated plants are frequently unsuitable for studying natural processes or for horticultural projects where the starting material must be well known or genetically natural.

The second point is that plant species are variable in such obvious features as overall shape or flower color and in more cryptic attributes: potential growth rates, hardiness, chromosome numbers, soil preferences, drought tolerance, or breeding patterns. The variations are often related to the place where a plant grows, so that knowing the wild source of a specimen tells much more about it than merely knowing the species. And if the source is known, it is possible to revisit the site to look further into a feature of special interest or to gather new seeds.

As an example of natural variation within a species influencing its performance in cultivation, consider one of the world's prize lumber species, the Douglas fir (*Pseudotsuga menziesii*) of western North America. (See this species at the very southern end of the Rhododendron Garden.) On European tree farms it turned out that Douglas fir seeds from wild sources sometimes yielded vigorous plantings while others matured disappointingly, depending on the seed collection place and on the place of subsequent cultivation.

In 1985 plant propagator David Wright and I began to bring Missouri natives, mostly trees, from wild sources into cultivation at the Garden. Each autumn I look into the whereabouts of the target species, obtain permissions needed to collect fruits or seeds, and do so. When seeds are taken, a leafy sprig is pressed and dried into an herbarium specimen, which is useful for reconsideration of the identity of the parental tree if necessary, and it serves as a permanent record of the collection readily located when today's acorn has grown into a mighty oak. Additionally, a computer entry is made, and the young plants are tagged with individual record numbers.

David Wright takes over when the seeds arrive. To promote germination, sometimes he etches the seeds with acid or subjects them to an artificial winter in the refrigerator or an artificial summer on heated mats, or a real season outside. With the help of his capable volunteers, Roy Cummings and Betsy Martin, the volumes of seeds (almost 1,000 in 1987) are sown and pampered until germination. When they sprout, David and his colleagues must take into consideration the natural soil types and other preferences of each species. The growing saplings are moved up through a series of pots to accommodate elongating roots. The plants spend their first few years in coldframes until they are big and strong enough to transplant.

In the program, we have about 50 species of Missouri trees and shrubs gaining strength behind the scenes. Among them are represented almost all of the 20 Missouri oak species, all eight of our native hickories (including pecans), three out of four Missouri ashes, three viburnums, and many others. Treelets from the 1985 and 1986 seed collections are beginning to appear around the Garden. One of the first to debut, near the center of the Woodland Garden, was the chinquapin oak (*Quercus muehlenbergii*), fittingly, a species discovered near St. Louis by George Engelmann, the Garden's first botanist. Watch for several additional young oaks about five feet tall scattered on the grounds.

The first seeds acquired in 1988 represent the same species as a grand old tree dating back to the time of the Garden's earliest days. Against the east wall near the Flora Gate Missouri's largest yellowwood leans on crutches, threatening not to be around for the next generation of Garden visitors. Yet last month, with the generous help of Wanda Doolen, a naturalist at Sam A. Baker State Park, the replacement grand old yellowwood came to the Garden, wild-collected and still in the pod. —*George Rogers, Ph.D.*

Ask the Answer Service

Moving Plants Indoors

Do you have a plant question? Call the Horticultural Answer Service, Monday through Friday, 9 a.m. to noon, at 577-5143.

Q. I made a terrarium in a large bottle. When I lift the lid, there is a foul, musty odor that I would like to eliminate. Do you have any suggestions?

A. Make sure you're not keeping your terrarium too wet. The trick is to keep the soil just barely moist and let the plants receive their water from the humid air inside the bottle. If you leave the lid on overnight and find the glass fogged in the morning, there is too much moisture inside. Vent the garden for a longer time to allow the excess humidity to escape. When the soil starts to feel dry, spray lightly, rather than soaking the soil. To minimize mustiness, when constructing your terrarium, it is a good idea to add a one-half-inch layer of horticultural grade charcoal between the potting soil and the drainage material at the bottom, and to mix a small amount of charcoal into the potting soil.

Q. Last Christmas I received a yellow-flowering hibiscus as a gift. This past summer I placed it outdoors and the blossoms were a peach color. Now this winter they have turned yellow again. What's going on?

A. Several factors may cause flowers to change color. Sunlight, temperature, and soil mineral content all can affect color. In the case of your hibiscus, I suspect the intensity of light outdoors caused the change. This can be seen in the foliage of coleus. Make cuttings from the same stock plant and grow some in shade and some in full sun. The leaf colors of the plants in sunlight will be intensified, but the colors in the shade plants will be faded or merely green.

Q. I'm growing an Agave in my sunroom. I've had it for seven years, and this past summer it sent up a tall flower stalk and blossomed. I let the stalk remain to see if seeds would develop. Instead, several little plants have formed on top of the stalk. I've looked everywhere in my garden books and none mentions this phenomenon, much less what to do with these plants. Can you help?

A. Agaves occasionally produce small bulblike structures called bulbils, in place of seeds. In fact, one rare species, *Agave murpheyi*, does not produce seeds at all, but reproduces entirely by bulbils. To propagate, remove the bulbil, pot it in a mixture of one part potting soil to two parts sand, and give it a little water. It should root rapidly and thereafter can be given the same care as your other *Agave*.

Q. My sister in California has a Chinese jujube tree. She says she thinks it will grow in St. Louis, and wants to give me a start. Will it grow here? What's the best way to propagate it?

A. Jujube (*Zizyphus jujuba*) can grow in St. Louis. A specimen is flourishing just south of Spoehrer Plaza here at the Garden and one reached considerable size in downtown St. Louis (described in the *Bulletin*, December 1963). Ask me this question again after a severe winter! For now, your jujube can be propagated by root cuttings taken in spring or fall. Make your cuttings about three inches long and insert them upright in a medium of half peat moss and half sharp sand. Transplant to a protected, well-drained, somewhat alkaline site.

Q. My house plants thrive outdoors all summer, but most barely survive the winter indoors. Do you have any suggestions?

A. During shorter winter days, try to give your plants as much sun as possible. Loss of lower leaves and long spindly new growth are signs that your plants are receiving insufficient light. Keep your plants out of cold drafts, however; it may be necessary to move them away from windows on cold nights to prevent chilling. They should not be situated close to heat ducts, radiators or other sources of hot, dry air.

Go easy on fertilizing. Most plants won't need to be fed again until vigorous growth resumes in spring. Rather than putting your house plants on a regular watering schedule during the winter, water only as needed, after the soils have begun to dry somewhat. Above all else, don't let your plants stand in saucers of water. More plants are killed by drowning this way than from lack of water.

Q. We'd like to have a living Christmas tree this year and plant it outside after the holiday. What's the best way to handle this?

A. Dig your planting hole before the ground freezes, and keep the hole unfrozen by filling it with leaves or straw. Don't forget to mulch the pile of soil you excavated, also. Cover the hole with some plywood for safety, then stretch a tarp or plastic over the plywood and the backfill. Store your tree outdoors in a protected site and don't let the root ball dry out. Plan on having your tree indoors for no more than a week. Apply an antitranspirant to keep the needles from drying out inside. After planting outdoors, be sure you give the tree a good soaking and mulch it well.

TIMELY TIPS

- Azaleas and rhododendrons planted this year should receive extra care. Make sure they are thoroughly watered before the ground freezes. Place a windscreen (burlap works best) on the west and north sides of each plant to shield them from drying winds.
- Protect ornamental flower pots from winter damage outdoors. They should be emptied of soil, cleaned and stored inverted under shelter.
- Binding evergreens with twine will prevent limbs from bending and snapping during winter ice storms.
- Place tree wraps or hardware cloth barriers around fruit trees to prevent damage from hungry rabbits and mice this winter.
- Consider recycled Christmas tree boughs for mulching mums, ferns, dianthus, and low azaleas.
- Mulch perennials after the ground freezes.
- After frost kills their leaves, mulch roses to a depth of 8 to 12 inches. Prune long canes back to 18 inches at that time.
- Continue mowing lawns until growth stops.

—Chip Tynan, The Answer Service

THE GARDEN AND TOWER GROVE PARK/by John Karel

A Common Heritage

Visitors to the Garden are aware that there is a large wooded park across Magnolia Street to the south. Those who have seen Father William Faherty's recent book, *Henry Shaw: His Life and Legacies*, are also aware that this 280-acre park has a close historical link with the Garden. Both tracts of land were once part of Shaw's rural estate, Tower Grove.

But beyond those basic facts, Tower Grove Park is an enormously interesting place. The park's historical connection with the Garden helps to reveal the purpose of their common founder, Henry Shaw. The park is a key presence in the Garden's local environment, defining the character of its southern boundary. And Tower Grove Park is a wonderful and delightful place that rewards the visitor with beauty, historical interest and charm.

When Henry Shaw turned his energies toward benefitting his community, he saw the Garden complemented by an adjacent large public park. The two institutions seem to have been interconnected in Shaw's mind from very early on. Both were carved from his land holdings, and both benefitted during Shaw's lifetime from his vigorous personal investment of time and resources. The park was donated to the City of St. Louis following the Civil War, in 1868. The land was located mostly beyond the city limits at that time, and an act of the Missouri Legislature was required to authorize the city to accept it. This law stipulated, in accordance with Shaw's wishes, that the park would be owned by the city, but administered by an independent Board of Commissioners, and so it is to this day. The law also stipulated that one of the commissioners must be the donor Henry Shaw, or his successor as director of the Garden. Thus, today Dr. Raven is by law one of the Commissioners in charge of Tower Grove Park.

The park is a masterpiece of Victorian design. It reflects the nineteenth century school of landscape design known as "gardenesque," with an emphasis on specimen trees and small groves, as opposed to sweeping vistas or rigidly formal patterns. Arranged throughout this landscape are a wonderful variety of embellishments including ornate summer houses, a bandstand, statuary, mock ruins, fountains and lily ponds. The first superintendent of the park was also the first head gardener at the Garden, James Gurney, Sr. Mr. Gurney was a skilled horticulturist and his work with tropical water lilies, especially the famous *Victoria regia*, brought acclaim to both the Garden and the park. The summer display of tropical water lilies remains one of Tower Grove Park's most colorful attractions.

So much of the original Victorian character of Tower Grove Park remains intact that the entire park has been placed on the National Register of Historic Places by the National Park Service. The park is perhaps the best preserved Victorian park landscape left in the United States.

In recent decades the park has suffered from a lack of funds and a declining image. If this were allowed to continue, the loss to our St. Louis heritage would be enormous. Accordingly, the Board of Commissioners has resolved to restore Tower Grove Park to its full glory as a splendid oasis of beauty and spiritual refreshment for the neighborhood and the community.

The Music Stand in Tower Grove Park, c. 1900

The endeavor began a year ago, and this spring park visitors delighted in a revival of romance and tradition with the return of horse drawn carriage rides. Another recent improvement was the renovation of the park's grass tennis courts, the only such Victorian amenities in the central United States. But much more remains to be done, especially repairs to aging park buildings and facilities.

A revitalized Tower Grove Park will enhance the neighborhood of the Garden, and will be a superb ornament for our regional community. Be on the alert to hear more about how you can participate in this exciting project in the months ahead. For additional information, including special tours, call 771-2679 or write Tower Grove Park, 4255 Arsenal Street, St. Louis, Missouri 63116.

John Karel was appointed director of Tower Grove Park effective October, 1987. Before his apppointment he worked as an environmental consultant, and from 1979 to 1985 he served as director of the division of parks and historic preservation for the state of Missouri.

Volunteer Needed

The Garden library needs a volunteer to arrange, describe, and preserve the Tower Grove Park archives. Revitalization of the park depends on a solid background of accurate historical information, and one of the initial goals for the park is to have the park records put in order. These records are housed in the Garden's archives. They include nineteenth century photographs and glass plate negatives, Henry Shaw's letters concerning the park, reports, minutes, and various other materials.

If you have a college degree, an interest in local history, type 40 words per minute, and are willing to learn to use a word processor, call Jeanne McGilligan at 577-5187. The project requires a minimum of 15 hours per week for 15 weeks.

DESIGNATED SUPPORT FOR THE CLIMATRON RENOVATION PROJECT

continued from page 3

Mr. and Mrs. E. Ted Boll
Miss Marjorie J. Borgmann
Mrs. Kathryn Boullion
Mr. and Mrs. Ingram S. Boyd Jr.
Mr. and Mrs. Ted Brady
Mr. and Mrs. Vance P. Braxton Jr.
Mrs. Blayne M. Brewer
Mrs. Walter F. Brissenden
Mr. and Mrs. David Brown
Mr. and Mrs. George W. Brown
Rev. and Mrs. Harsh J. Brown
Betsey Bruce
Mr. and Mrs. Roger Brueckman
Miss Leliaetta Bruns
Mr. Robert M. Buckner
Mrs. Gustavus A. Buder Jr.
Mr. Gustavus A. Buder III
Miss Ruth E. Buerke
Mr. and Mrs. Harry Buescher
Miss Virginia E. Burmeister
Mr. and Mrs. Richard L. Bushman
Ms. Loretta Calcaterra
Mr. Hugh D. Callahan
Mr. Jules D. Campbell
Mr. and Mrs. James M. Canavan
Mr. and Mrs. J. J. Landers Carnal
Miss Adelaide Cherbonnier
Mrs. Fielding T. Childress
Mrs. C. Calvin Christy
Mr. Edwin J. Cisar
Mr. Wesley H. Clark
Mr. and Mrs. Michael L. Clement
Ms. Jane C. Coffey
Mr. Ken Cohen
Mr. Sidney S. Cohen
Mr. John J. Cole
Mr. and Mrs. Jesse F. Colvin
Mr. and Mrs. William P. Conant Jr.
Mr. and Mrs. Tom J. Connelly
Mrs. Virginia K. Conroy
Contico International Inc.
Fr. Robert L. Corbett
Mr. and Mrs. Gary Corbin
Mrs. James A. Corrigan
Dr. David J. Costigan
Mrs. Dwight W. Coultas
Dr. William S. Coxe
Mrs. Florence C. Crancer
Mr. and Mrs. P. Terence Crebs
Dr. Marshall Crosby
Mrs. Paul W. Crow
Mr. and Mrs. Thomas W. Cummins
Ms. Marie D. Cusanelli
Mr. and Mrs. David E. Dale
Mr. and Mrs. Alphonse F. Dames Jr.
Dr. and Mrs. William H. Daughaday
Dr. and Mrs. Morris Davidson
Drs. E. and F. Davis
Mrs. Jane Dean
Mr. and Mrs. Richard F. Decker
Dr. and Mrs. Tony M. Deeths
Mr. John A. DeMonte
Mr. David Desertspring and
Ms. Sherrie Spangler
Mr. and Mrs. William L. Desloge
Mrs. Bertha Deutsch
Mr. and Mrs. Carl J. Deutsch
Ms. Shirley Dirhold
Mr. and Mrs. Charles H. Dolson
Mr. and Mrs. Earl M. Donahue
Mrs. Thomas A. Dooley
Mr. and Mrs. Duncan Dorris
Mrs. Veronica S. Dougherty
Mrs. Judith A. Doyle
Mr. Richard F. Doyle
Dr. and Mrs. Robert C. Drews
Mrs. Leonard Duerbeck
Irene L. Dulin
Mrs. Henry P. Duncker
Mr. and Mrs. Billy C. Dunehew
Mr. and Mrs. Alfred V. Dunkin
Mr. and Mrs. Richard D. Dunlop
Mrs. Dee W. Eades
Mr. and Mrs. Stephen B. Earhart
Mr. and Mrs. Dana Edwards
Mr. and Mrs. Joseph Eigner
Mr. and Mrs. Robert Eisner
Dr. and Mrs. Donald H. Eldredge
Miss Barbara C. Elftman
Mr. and Mrs. Robert Elgin
Miss Helene J. Elkins
Mr. and Mrs. Robert A. Emnett
Mr. and Mrs. Henry W. Endres
Prof. and Mrs. Joseph Ewan
Mrs. Adah W. Fantilli
Mr. Thomas C. Farnam
Mr. Alan R. Farris
Miss Mary Lou Farrow
Mrs. J. Maver Feehan
Mrs. Lorraine C. Feiner
Dr. and Mrs. Robert Feinstein
Mrs. Melvin Feist
Mr. Kenneth L. Feldhaus
Miss Clara R. Fieselmann
Dr. and Mrs. Murray E. Finn
Mrs. Helen E. Fitzroy
Mr. and Mrs. Walt Floyd
Mr. and Mrs. William Floyd
Miss Susan Fluegel
Mrs. Roger M. Folk
Mr. and Mrs. Robert B. Forbes
Ford Motor Co.
Mr. and Mrs. Lee T. Ford
Mrs. Robert Frane
Mr. and Mrs. Holger Frederickson
Morris Fredlich
Mrs. Edward Fredrickson
Miss Dorothy M. Friday
Ms. Phyllis Friedman
Mr. and Mrs. Charles R. Fritschle
Mr. and Mrs. David W. Fullgraf
Lou Fusz Motor Co.
Miss Rosalie Fusz
Mr. and Mrs. Robert J. Gaddy
Mr. William E. Gallagher
Mr. and Mrs. D. Goodrich Gamble
Mr. Hollis L. Garren
Edward Chase Garvey Memorial
Foundation
Mr. and Mrs. Robert L. Gass
Mr. Lloyd Gaus
Miss Gladys M. Gerdel
Mr. Frank Gerstenberg
Ms. Sandra Gibson
Mrs. Kenneth D. Gieck
Mr. and Mrs. Glenn L. Gifford
Dr. and Mrs. Samuel L. Gilberg
Dr. and Mrs. Louis Gilula
Mr. and Mrs. Webster Glasscock
Mr. and Mrs. Warren Glickert
Mr. and Mrs. James F. Godat
Ms. Dorothy E. Goebelt
Mr. Martin M. Goldman
John R. Goodall Trust
Ms. Dorothy J. Gorsuch
Dr. and Mrs. Robert J. Greaves
Allen P. and Josephine B. Green
Foundation
Ms. Elizabeth L. Green
Mrs. John R. Greene
Mrs. Mary E. Greiner
Mrs. Merle L. Griffin
Mrs. R. M. Griffin
Mr. and Mrs. Martin Grommet
Mrs. David N. Grosberg
Ms. Carol Gruen
Miss Iris Guenther
Mr. Douglas Guirl
Mr. and Mrs. Joseph J.
Gummersbach
Mr. Paul A. Gusdorf
Mr. and Mrs. William E. Guy
Mr. and Mrs. Willis D. Hadley
Mrs. Gertrude H. Hagemeier
Hager Hinge Co.
Mr. Robert N. Hagnauer
Mr. and Mrs. Norman W. Halls
Mr. and Mrs. G. William Hamilton
Mr. Warren Handel
Mr. Clarke T. Harding Jr.
Mr. and Mrs. Lewis T. Hardy
Mr. and Mrs. O. W. Harkrider
Ms. Marilyn L. Harrington
Mr. and Mrs. Gary Hartman
Mr. George K. Hasegawa
Ms. Helen Havird
Mr. and Mrs. Richard S. Hawes III
Miss Eula M. Hawn
Mr. and Mrs. Daniel Heagney
Miss JoAnn Hediger
Mr. and Mrs. Karl J. Heilman
Mr. and Mrs. Jordan Heiman
Mr. and Mrs. John C. Heisler
Mr. and Mrs. Elmer H. Held Sr.
Mr. and Mrs. William R. Heldmann
Mr. and Mrs. Max Hellman
Mrs. Irma R. Henderson
Mr. and Mrs. Wayne Henderson
Mr. James E. Hendry
Ms. Dolores Henson
Dr. and Mrs. Falls B. Hershey
Mr. and Mrs. H. E. Hetzler
Mr. and Mrs. J. York Hewitt
Mr. and Mrs. Donald Hicks
Bernice M. Hilgendorf
Miss Margaret Hilliker
Mrs. Sally W. Hirschi
Mr. and Mrs. Albert J. Hitt
Mrs. John Hochreiter
Ms. Eileen M. Hoehn
Mr. Milton W. Hoeper
Mrs. Harry L. Hofmeister
Miss Lilian Hohman
Mr. Richard W. Hokamp
Mrs. Jerome K. Holloway
Mrs. Earl P. Holt
Mr. and Mrs. Tom Holzberlein
Dr. and Mrs. Simon Horenstein
Mr. Robert Howard
Mrs. H. C. Howes
Mr. and Mrs. Earl H. Hoyt Jr.
Mrs. Howard Hubbell
Miss Ann Hubel
Mr. and Mrs. David R. Human
Mr. Henry J. Hummert
Hunter Engineering Co.
Ms. Elizabeth Hunter
Mr. and Mrs. Walter R. Illston
International Brotherhood of
Electrical Workers
Mr. and Mrs. John Isaacs III
Ms. Louise C. Ittner
Mr. and Mrs. Ben F. Jackson
Mrs. Bernetta Jackson
Ms. Elizabeth Ann Jackson
Mrs. Emily Jackson-Machelski
Mrs. Jane A. Jacobs
Mr. and Mrs. T. Frank James Jr.
Mrs. Gene Jantzen
Ms. Kathryn L. Jepsen
Mr. and Mrs. Paul T. Johnson
Mr. and Mrs. Elmer Jones
Mrs. Gretchen P. Jones
Ms. Hilda P. Jones
Mr. and Mrs. Landon Y. Jones
Miss Colleen Kalinoski
Mrs. W. A. Kamp
Dr. and Mrs. Michael M. Karl
Mr. and Mrs. Douglas Kassabaum
Mrs. Jean Kautzman
The Kellwood Company
Mr. Charles H. Kemper
Rev. Msgr. Andrew A. Kennedy
Ms. Marcella M. Kennedy
Mr. and Mrs. Alfred Kirkpatrick
Mr. and Mrs. George Kloster
Mr. Carl H. Klug
Mrs. Hazel L. Knapp
Miss Erna Knoernschild
Ms. Marion M. Koch
Ms. Mary B. Koch
Mr. and Mrs. James Koenig
Mr. Robert W. Kohlsdorf
Ms. Linda M. Kohne
Mrs. Wallace Kolbrener
Mr. Howard Kopadt
Dr. Stuart A. Kornfeld
Dr. and Mrs. Nicholas Kouchoukos
Mr. and Mrs. Willfred Kracke
Mr. and Mrs. Gerhardt Kramer
Ms. Hildegarde Kramer
Mr. and Mrs. Robert E. Kresko
Mr. and Mrs. Henry Krieger Jr.
Mrs. Harry W. Kroeger
Mrs. Z. Juanita Kroenlein
Mrs. Eugene Kubik
Miss Vera K. Kuehne
Mr. and Mrs. Jack Kuhl
Mr. and Mrs. Edward B. Kuhlmann
Mrs. Sally Kushins
Mr. and Mrs. Milton Kushkin
Mr. and Mrs. Berthold L. Lange Jr.
Miss Karen Larsen

Mr. and Mrs. Thomas F. Latzer
Dr. Joseph J. Lauber
Miss Mary Laun
Mrs. Ross R. Lee
Mr. and Mrs. Louis W. Lehman
Mrs. Virginia M. Lehr
Mr. and Mrs. Arthur Lieber Jr.
Mrs. Ada A. Lilienkamp
Mr. and Mrs. Charles F. Limberg
Mr. Ronald G. Lindemann
Miss Billie Linder
Mrs. Ernest D. Loewenwarter
Mr. and Mrs. Joseph P. Logan
Maj. Gen. and Mrs. Donald A. Logeais
Mr. James F. Longshore
Mr. and Mrs. Stanley Lopata
Mr. and Mrs. Roger E. Lord Jr.
Ms. Jean M. Lovati
Miss E. Lueking
Ms. Kathleen Luepke
Dr. and Mrs. Carlyle A. Luer
Mrs. Rene J. Lusser
Mr. and Mrs. Walter Lutz
Mr. James Lyon
Mr. and Mrs. Lorenzo J. Magill
Mr. and Mrs. Clem L. Maher
Mr. Mark Maltagliati
Mr. and Mrs. Clarence E. Mange
Manufacturers Supplies Co.
Marsh & McLennan Inc.
Mr. William W. Martin
Mary Institute Class of 1993
Ms. Jane Mason
Mr. and Mrs. David Massa
Mr. Frank J. Matula
Ms. Margie Wolcott May
Dr. and Mrs. Robert A. Mayer
Mrs. Frank Mayfield
Mr. Justin J. McCarthy III
Mr. John D. McCutcheon
Mrs. William A. McDonnell
Mrs. Harry McKee
Mrs. Gene McMahon
Mr. and Mrs. Clifford McNames
Mr. and Mrs. Thomas J. McReynolds
Mr. Tom McReynolds and Ms. E. Rebecca Case
r. Willem Meijer
Mr. David F. Mendelson
r. and Mrs. Lawrence E. Mendonsa
Mr. and Mrs. Harold J. Menteer
Mr. and Mrs. Marc Menteer
Mr. and Mrs. Richard F. Merckel
Mrs. Kenneth Merten
Ms. Sally G. Metz
Mr. and Mrs. Richard A. Meyer
Mr. and Mrs. Ronald E. Meyer
Mr. and Mrs. Bruce Michelson
Mr. and Mrs. Charles Miller
Mr. and Mrs. Raymond D. Miller
Ms. Marian M. Mills
Mr. and Mrs. I. E. Millstone
Ms. Dorothy Moore
Mr. and Mrs. John W. Moore
Ms. Laura Moore and Mr. David Herman
Mrs. H. Leighton Morrill
Mr. and Mrs. Vaughan Morrill Jr.
Mr. and Mrs. H. B. Morris
Ms. Virginia Muehl
Mrs. Ruth E. Murphy
Dr. and Mrs. William A. Murphy Jr.
Marjorie Murray
Dr. Lillian Nagel
Dr. Helen E. Nash
Mr. and Mrs. Fred W. Nehring
Dr. Charles A. Nester Jr.
Ms. Mary L. Neukum
Ms. Betty L. Nicol
Mr. and Mrs. Louis H. Niebling
Ms. Mary M. Niemeyer
Miss Emily Novak
Mrs. Fred A. Oberheide
Mrs. Dorothy S. O'Connor
Mr. and Mrs. Walter E. O'Leary
Prof. and Mrs. Joseph Olson
Ms. Kim Olson
Mr. and Mrs. N. M. Osborne
Mr. and Mrs. Robert R. Owen
Mr. and Mrs. Thomas E. Owen
Miss Florence Paleardi
Mr. and Mrs. George Parker
Mr. and Mrs. Ward S. Parker
Mr. and Mrs. Thomas S. Parkes
Mr. and Mrs. Noble C. Parsonage
Mr. David Paul
Mr. and Mrs. Donald W. Paule
Mr. and Mrs. E. J. Peltier
Mrs. J. Michael Pennington
Dr. and Mrs. Carlos A. Perez
Mr. and Mrs. John W. Perkins
Mr. Robert Petchulat
Mr. and Mrs. Donald A. Peterson
Mrs. Charles P. Pettus
Mrs. G. P. Plaisance
Ms. Janice Plowman
Mr. and Mrs. Philip B. Polster
Mr. and Mrs. C. Robert Pommer
Mr. Edgar C. Porte
Mrs. Fred W. Praechter
Mr. and Mrs. Ralph E. Pumphrey
Mr. and Mrs. Louis R. Putzel
Rev. Maurice J. Quilligan
Mrs. Virginia B. Rainer
Miss Jacqueline B. Raithel
Mr. and Mrs. H. T. Ratcliff Jr.
Mr. and Mrs. Henry E. Rathert
Mrs. C. W. Rauscher
Mr. and Mrs. Paul B. Rava
Mr. and Mrs. Gilbert A. Reed
Mr. Archer O. Reilly Jr.
Mr. and Mrs. William E. Remmert
Mr. and Mrs. Elmer D. Renaud
Ms. Catherine J. Reres
Mr. Carl D. Rhodes
Mrs. Ann D. Rice
Mr. Thomas W. Rich
Mrs. Joseph A. Richardson
Miss Joann Rickelmann
Ms. Lorraine Rickleman
Ms. Irene Riddle
Mr. and Mrs. Richard C. Rimat
Mr. and Mrs. Joe Robb
Mr. and Mrs. Bruce G. Robert
Mr. and Mrs. Eli Robins
Mrs. Seth A. Robins
Joseph H. and Florence A. Roblee Foundation
Mrs. Joseph G. Roldan
Mr. Bert B. Rosen
Dr. Herbert E. Rosenbaum
Mr. Dale Rosenberg
Dr. and Mrs. Donald Ross
Mr. and Mrs. Benjamin Roth
Mr. Michael Roth
Mr. and Mrs. Philip R. Roth
Mr. and Mrs. Jim Rothbarth
Mr. and Mrs. William C. Rowe
Mr. and Mrs. Warren E. Rummelhoff
Miss Marie Rutlin
Dr. Jo-Ellyn M. Ryall
Mr. and Mrs. Sterling J. Ryan
Dr. and Mrs. Joseph A. Santiago
Dr. and Mrs. Julio V. Santiago
Mr. David J. Sauer
Mr. and Mrs. Louis E. Sauer
Mr. Stanley Sawyer
Ms. Mildred W. Schaefer
Ms. Virginia D. Schaefer
Mr. and Mrs. John L. Schlaffer
Miss Martha Schlapbach
Dr. and Mrs. Donald Schreiweis
Mrs. F. H. Schroeder
Mrs. A. C. Schuchardt
Mr. and Mrs. Robert E. Schultz
Dr. and Mrs. Charles H. Schumacher
Dr. and Mrs. Benjamin D. Schwartz
Dr. and Mrs. Henry G. Schwartz
Miss Elizabeth Scott
Mr. and Mrs. Hugh Scott Jr.
Mrs. Ruth E. Scott
Mr. Eugene Sebelski
Dr. and Mrs. Hyman R. Senturia
Mrs. Elizabeth Jones Shands
Dr. Richard Sheffer
Miss Helen E. Sheppard
Ms. Esther M. Shoults
Mrs. Doris L. Shreve
Ms. Bonnie Shure and Mr. Edward Greenberg
Dr. and Mrs. Sherman J. Silber
Miss Jan Simons
Dr. and Mrs. John S. Skinner
Mr. and Mrs. Milton R. Skinner Jr.
Mr. Eric Slessinger
Mr. and Mrs. George B. Sloan
Mr. and Mrs. Richard Smith
Mr. and Mrs. Robert F. Smith
Mr. and Mrs. Robert L. Smith
Dr. and Mrs. Stephen R. Smith
Mr. Carl A. Snarrenberg
Miss Alice A. Snay
Miss Bernice Snelson
Mr. and Mrs. Richard R. Snyder
Mr. and Mrs. Ralph K. Soebbing
Dr. Steven D. Spaner
Mr. and Mrs. Edwin Spiegel III
Mrs. Harriet B. Spoehrer
Mr. John E. Stackle
Mrs. Lloyd C. Stark
Mr. and Mrs. Louis Stark
State of Missouri Dept. of Natural Resources
Mr. and Mrs. Jerome M. Steiner
Mr. and Mrs. John Steinfeld
Mr. Walker M. Stewart
Mrs. Emil Studnicki
Mr. and Mrs. Walter A. Suhre Jr.
Miss Mary L. Sunderman
Nancy L. Swan
Mr. William Swanson and Ms. Maria Smietana
Mrs. Carl J. Tabor
Mr. and Mrs. William K. Tao
Ms. Elaine M. Tatkow
Mr. Carl W. Taylor
Mr. and Mrs. Hal Taylor
Mr. and Mrs. Thomas P. Taylor III
Tempset Inc.
Mrs. Whitelaw Terry Sr.
Mrs. Margaret C. Thomas
Dr. and Mrs. M. Bryant Thompson
Mr. William K. Thompson
Mr. and Mrs. Jerrold Tiers
Mr. and Mrs. Gene Tischler
Trammell Crow Co.
Mr. Otto C. Trostel
Mr. and Mrs. Joseph Tucker
Joy Tucker
Mrs. T. C. Tupper
Dr. and Mrs. James K. Turner
Prof. Sarah T. Turner
Miss Vera Ulbricht
Mrs. Mary M. Usher
Dr. Frederick H. Utech
Dr. and Mrs. Andres J. Valdes
Ms. Nicole Van Opdenbosch
Mr. and Mrs. Vasil Vasileff
Mr. and Mrs. Alan P. Vierheller
Mrs. Helen A. Vogel
Mr. and Mrs. Eugene I. Vogt
Mr. and Mrs. Charles Voigt
Ms. Dorothy Vondrasek
Mr. Donald A. Wachter
Miss Florence E. Wagner
Mr. and Mrs. William R. Wagner
Mr. and Mrs. Robert Waites
Dr. and Mrs. Stanley Wald
Mr. and Mrs. W. Edmund Waller
Versie and Lovell Walser
Mr. and Mrs. Jeffrey Walton
Mr. and Mrs. James M. Warden
Mrs. C. L. Washburne
Ms. Joan Washington
Dr. Martin H. Waters
Drs. Mark and Cassandra Weaver
Mrs. Leslie F. Weber and Miss Grace T. Weber
Mr. and Mrs. Leslie J. Wehling
Mrs. S. A. Weintraub
Mr. Danny S. Wells
Dr. and Mrs. Frits W. Went
Ms. Carol Sue Wheeler
Mr. F. L. Whelan
Mr. and Mrs. George P. Whitelaw Jr.
Mr. and Mrs. William M. Whitmire
Miss Carolyn Whitmore
Ms. Patricia A. Wickter
Mrs. Arvilla F. Wieland
Miss Marjorie Wildey
Mr. Rolla J. Wilhite
Dr. and Mrs. James A. Willibrand
Mr. Merlin F. Willmann
Miss Edna I. Wilton
Mr. and Mrs. Louis P. Wingert Jr.
Mr. and Mrs. John Winkle
Mrs. Hildegarde Wunderlich
Mr. and Mrs. Eugene J. Zehr
Mr. and Mrs. Ferdinand B. Zienty

Missouri Botanical Garden

CALENDAR OF EVENTS

November-December 1988

NOVEMBER 4 / FALL FLOWER SHOW PREVIEW

5 to 8 p.m., Friday, Orthwein Floral Display Hall. Join us to celebrate the return of our popular flower shows. A design of simple elegance recreates the traditional beauty of a Japanese garden. Chrysanthemums in an array of colors accent a teahouse, drum bridge, lanterns, a pool, dry gardens and statuary. Music, cash bar. Dinner buffet will be available in the Gardenview Restaurant. For Members only.

NOVEMBER

1 TUESDAY

Walking Tour

1 p.m. Meet at Ridgway Center ticket counter. (Sunday tours meet at 2 p.m.) Tours are led by Garden Guides trained to discuss horticulture, ecology, architecture, history and sculpture of the Garden. Join us for a delightful and informative experience, rain or shine. Free.

1-13 TUES.-SUN.

A Celebration of Wildlife

9 a.m. to 5 p.m. daily, Monsanto Hall; display continues. Paintings and sculpture by the Missouri Wildlife Artists Society, funded in part by the Missouri Arts Council, a state agency. Free.

2-4 WED.-FRI.

Holiday Preview Sale

9 a.m. to 7:30 p.m. daily, Garden Gate Shop. Members receive 20 percent off all merchandise, all three days, during the Shop's annual sale. *See page 18.*

5-27 SAT.-SUN.

Fall Flower Show

9 a.m. to 5 p.m. daily, Orthwein Floral Display Hall. All the beauty of autumn in a splendid array of colorful chrysanthemums. Free. *See highlight above.*

5 SATURDAY

Walking Tour

1 p.m. See November 1 for details.

6 SUNDAY

Walking Tour

2 p.m. See November 1 for details.

7 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. On-the-spot identification of plants and horticultural troubleshooting by Master Gardeners. Free.

8 TUESDAY

Walking Tour

1 p.m. See November 1 for details.

12 SATURDAY

Walking Tour

1 p.m. See November 1 for details.

15 TUESDAY

Walking Tour

1 p.m. See November 1 for details.

19 SATURDAY

Walking Tour

1 p.m. See November 1 for details.

20 SUNDAY

Walking Tour

2 p.m. See November 1 for details.

21 MONDAY

Plant Clinic

9 a.m. to noon, Ridgway Center. See November 7 for details.

22 TUESDAY

Walking Tour

1 p.m. See November 1 for detai

26 SATURDAY

Walking Tour

1 p.m. See November 1 for detail

29 TUESDAY

Walking Tour

1 p.m. See November 1 for detail

30 WEDNESDAY

Lecture: "Henry Shaw's England"

7:30 p.m., Shoenberg Auditoriu
Patrick Bowe, landscape architec
and tour leader for the Members
trip to England in May, will prese
a preview of the tour. Free.
See page 16.

NOVEMBER 15 / MEMBERS' DAY "Memories of 1904"

2 p.m., Tuesday, Shoenberg Auditorium. Slide lecture will be presented by Mrs. J. C. Horner of the 1904 World's Fair Society. The Rivertown Barbershop Quartet will entertain, and a special "Victorian Lunch" will be available in the Gardenview Restaurant For Members only.

DECEMBER

SATURDAY

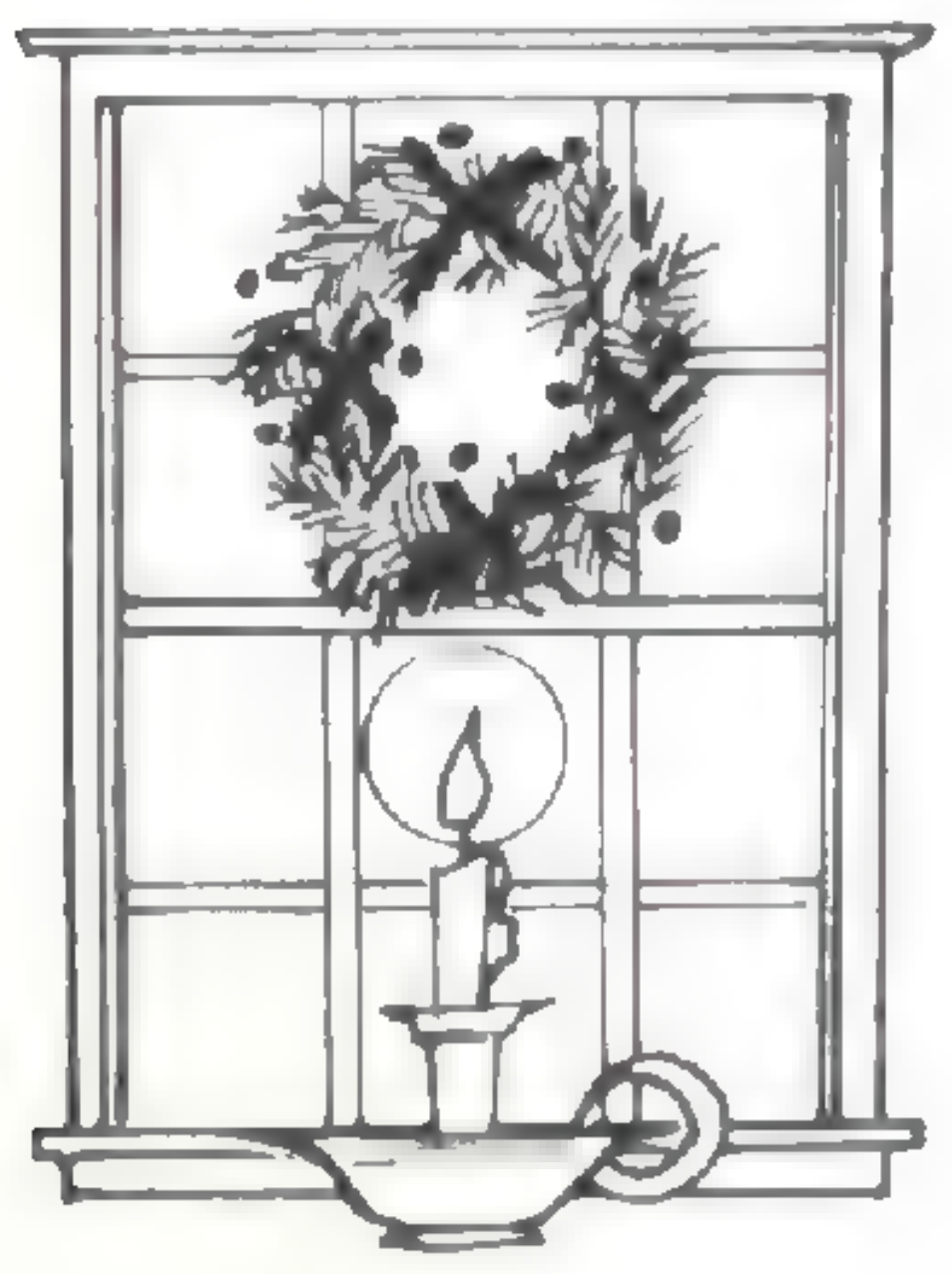
lking Tour
m. See November 1 for details.

SUNDAY

lking Tour
m. See November 1 for details.

TUESDAY

lking Tour
m. See November 1 for details.



WEDNESDAY

ver Grove House dlelight Tour
) to 7:30 p.m., Tower Grove use. Sixth annual candlelight tour arden founder Henry Shaw's ntry home, decorated in Vican splendor for the holidays. ervations are required. Call 5150 or use the form on page 17. 0 per person includes refreshnts. *See page 17.*

-10 THURS.–SAT.

iday Plant Sale
m. to 7:30 p.m. Thursday and ay; 9 a.m. to 5 p.m. Saturday. mbers receive 20 percent off all chandise. *See page 18.*

FRIDAY

liday Fantasy" Flower Show
m. to 5 p.m. daily through Janu- 1, 1989, Orthwein Floral Display . (Closed on Christmas Day.) ual display of poinsettias and r seasonal blooms, to delight dren of all ages. Free. *highlight above.*

DECEMBER 8 / "HOLIDAY FANTASY" PREVIEW

5 to 8 p.m., Thursday, Orthwein Floral Display Hall. The 1988 Holiday Flower Show creates a wonderland of festive delights accented with poinsettias and other seasonal blooms. Music, cash bar. Dinner buffet will be available in the Gardenview Restaurant. Sponsored by The Daniel and Henry Co. For Members only. *See back cover.*

DECEMBER 10 / MEMBERS' DAY "Get Into the Holiday Spirit"

1:30 p.m., Saturday, Shoenberg Auditorium. Delight in "The Gift of the Magi", read by KSDK-TV's Jennifer Blome, and enjoy a concert of holiday favorites sung by the Central Visual and Performing Arts at McKinley High School Choir. For Members only.

9 FRIDAY *continued*

Holiday Luncheon
11:30 a.m. to 1 p.m., Tower Grove House Tea Room. Tower Grove House Auxiliary offers a special luncheon menu, and guests are greeted with holiday punch. Reservations are required by calling 577-5150 starting November 15, 9 a.m. to noon. Payment must be received by December 1. Luncheons are also offered Monday through Friday, December 12-16.

10 SATURDAY

Walking Tour
1 p.m. See November 1 for details.

12 MONDAY

Holiday Luncheon
11:30 a.m. to 1 p.m. See December 9 for details.

13 TUESDAY

Walking Tour
1 p.m. See November 1 for details.

13 TUESDAY *continued*

Holiday Luncheon
11:30 a.m. to 1 p.m. December 9 for details.

14 WEDNESDAY

Holiday Luncheon
11:30 a.m. to 1 p.m. See December 9 for details.

15 THURSDAY

Holiday Luncheon
11:30 a.m. to 1 p.m. See December 9 for details.

Sounds of Christmas
1 p.m. to 8 p.m., Ridgway Center. Performances of seasonal music by local musicians and carolers. Garden Gate Shop and Gardenview Restaurant will be open. Free, but there will be a fee for photos with Santa.

16 FRIDAY

Holiday Luncheon
11:30 a.m. to 1 p.m. See December 9 for details.

17 SATURDAY

Walking Tour
1 p.m. See November 1 for details.

Santa Lucia Celebration
11 a.m. to 5 p.m., Ridgway Center. Festivities honoring the Swedish Saint Lucia who brings light, hope and peace to all. Carolers, folk dancing and a candlelight procession, co-sponsored by the Swedish Council of St. Louis. Free.

18 SUNDAY

Walking Tour
2 p.m. See November 1 for details.

20 TUESDAY

Walking Tour
1 p.m. See November 1 for details.

22 THURSDAY

Sounds of Christmas
1 p.m. to 8 p.m. See December 15 for details.

24 SATURDAY

Walking Tour
1 p.m. See November 1 for details.

25 SUNDAY

Christmas Day
The Garden is closed.

27 TUESDAY

Walking Tour
1 p.m. See November 1 for details.

31 SATURDAY

Walking Tour
1 p.m. See November 1 for details.

FROM THE MEMBERSHIP OFFICE

ECUADOR—Visit a Botanical Wonderland

February 17—March 2, 1989

Ecuador, on the west coast of South America, is one of the most botanically diverse regions on Earth (see the *Bulletin*, May/June 1988). Join us for an adventure that will explore this extraordinary area, including the Andes, lowlands of the Amazon basin, rain-drenched, coastal Chocó, and the isolated volcanic mountains of Cotopaxi and Chimborazo.

The tour departs from Miami. Highlights of the itinerary include:

- The colorful highland market at Otavalo, dating from pre-Inca days.
- Indian villages displaying traditional crafts, culture and agricultural methods.
- The Cochasqui region, famous for its pre-Inca archeological site under excavation.
- An overnight stay at a hacienda offering trails leading to tree ferns, carpets of moss, and richly-colored flowering plants including epiphytic bromeliads and orchids.
- A trip by motorized dugout canoe down the Napo River, a major tributary of the Amazon, into the lowland Amazon jungle.
- A stay at Jatun Sacha Biological Station, a center for Garden field research. Hikes into the rainforest and lectures are featured.
- A trip up the Pastaza River Canyon along steep slopes and plunging streams, followed by a dip in the thermal springs at the base of the Tungurahua Volcano.
- Overnight at La Cienega, a 300-year-old hacienda in the sierra country.
- A hike up to the tundra just below the glaciers at the base of Cotopaxi, world's highest active volcano (19,700 feet).

Watch your mail for more details on this marvelous trip, or call 577-9517 for information and registration.

CENTENNIAL TOUR

THE GARDENS OF YORKSHIRE—HOMELAND OF HENRY SHAW

May 13—26, 1989

Join Dr. and Mrs. Raven on an unforgettable tour of stately English homes and exquisite gardens as we commemorate the centennial year of the Garden's Board of Trustees, and 50 years of Garden membership.

The trip includes a visit to Sheffield, birthplace of Henry Shaw, and Chatsworth, home of the dukes of Devonshire and Shaw's inspiration for his Garden. Arrive in London on May 22 and visit the world famous Chelsea Flower Show and the Royal Botanic Gardens, Kew.

Landscape architect and garden designer Patrick Bowe will travel with the tour throughout Yorkshire. A graduate of University College, Dublin, with a degree in architecture, he is the author of *Irish Gardens and Desmesnes from 1830,* and *The Gardens of Ireland*. Mr. Bowe has led trips for the Royal Botanic Society, the Archives of American Art and the Marquand Park Foundation of Princeton. A native of County Waterford, Ireland, he is married to art historian Dr. Nicola Gordon Bowe, and currently makes his home in Dublin.

Mr. Bowe will give a tour preview on November 30, at 7:30 p.m. in Shoenberg Auditorium. Watch your mail for more information, or call 577-9517.

MEMBERS' TOUR

THE GARDENS AND HOUSES OF SAVANNAH, BEAUFORT, AND CHARLESTON

March 29—April 3, 1989

Spend two nights in Savannah, lovely city by the sea, visiting houses and gardens in the Historic District. Travel to Beaufort, a delightful seaside city of Greek Revival and Georgian houses; then on to Charleston, a city of infinite beauty and charm. Our three-night stay in this gracious southern city is highlighted by a candlelight tour of private homes; walks through private gardens; and a day spent visiting Drayton Hall and Magnolia plantations while the azaleas and camellias are in bloom.

Watch your mail for details; for information or reservations, call 577-9517.

Membership Dues to Increase in 1989

Membership dues for regular level Members at Missouri Botanical Garden will increase from $35 to $40 in 1989. Membership benefits for a regular member include:

- Free admission for two adults and children under the age of 16
- More than 20 invitations during the year to special Garden events including four "Members only" flower show previews, 12 members days, and four or more major members' events
- A 10 percent discount at the Garden Gate Shop
- Free subscription to the bimonthly *Bulletin*
- Free reciprocal admission at other botanical gardens throughout the country
- Discounts on education classes and facility rentals at the Garden
- Travel opportunities through the Membership Travel Program

The new dues structure will take effect January 1, 1989. Members renewing prior to that time can renew at the $35 level.

Twenty years of Guides' uniforms (left to right): Harriot Smith, 1969; Edna Dependahl, 1971; Midge Tooker and Sally Morse, 1973; John Scott as Henry Shaw, the first Garden Guide; Ann Case and Katherine Chambers, 1978; Bill Clark, 1983; and Maripat Monterubio, as a Guide in the year 2000.

Guides Celebrate 20 Years

On September 13, 1988, the Garden Guides celebrated their twentieth anniversary. Ken Peck, who developed the training course for the first group of guides in September, 1968, was the keynote speaker. Mr. Peck was head of the Garden's education division for 24 years until 1981, when he joined the Hummert Seed Company as technical adviser. The celebration was highlighted by "A Guide for All Seasons," a fashion show of the Guides' uniforms from the past 20 years. A reception and luncheon followed. Mary Jane Kirtz was chairman of the celebration, and Betty Guarraia directed the fashion show. Nancy Thompson and Peggy Abel are co-chairmen of the Garden Guides.

GIFT MEMBERSHIP ORDER FORM

Please mail at least three weeks prior to occasion:

☐ *Holidays* ☐ *Birthday* ☐ *Other* ____________

Gift To:

NAME ____________

ADDRESS ____________

CITY ____________ STATE ______ ZIP______

TELEPHONE ____________

Sign gift card: ____________

Date Needed By: ____________

Regular Membership $35.

Contributing Membership $75.

For more information call 577-5118.

Gift From:

NAME ____________

ADDRESS ____________

CITY ____________ STATE ______ ZIP ______

TELEPHONE ____________

☐ Enclosed is my check for $ ____________

☐ Please charge: VISA No. ____________

MasterCard No. ____________

Name as it appears on card: ____________

Expiration date: ____________

Please make checks payable to: Membership Office, Missouri Botanical Garden,
P.O. Box 299, St. Louis, MO 63166.

NEWS FROM TOWER GROVE HOUSE

Holiday Luncheons

Tower Grove House once again will be decorated in Victorian splendor for the holidays. The decorations will be on view from Tuesday, December 6 through Saturday, December 31 from 10 a.m. to 4:30 p.m. The Garden is closed Christmas Day.

The Tower Grove House Auxiliary's Tea Room will again offer special holiday luncheons on December 9, 12, 13, 14, 15 and 16 from 11:30 to 1 p.m. Guests will be greeted with holiday punch.

Reservations are required and will be accepted beginning Tuesday, November 15, between 9 a.m. and 12 noon. Checks must be received no later than Thursday, December 1, 1988. For additional information and reservations call 577-5150.

Candelight Tour

The Sixth Annual Candlelight Tour, sponsored by the Tower Grove House Auxiliary, will be held on Wednesday, December 7, 1988, between 4:30 and 7:30 p.m. Reservations may be made by mailing in the form below. For additional information call Tower Grove House, 577-5150. The fee includes a candlelight tour of the decorated house, plus refreshments in the Tea Room. Enter at 2345 Tower Grove, where your name will be registered. Parking is available across the street at Tower Grove Baptist Church.

Please make ____________ reservations for the Candlelight Tour, Wednesday, December 7, Tower Grove House between 4:30 and 7:30 p.m. Enclosed is my check for $__________ , at $5.50 per person. Please make checks payable to: Tower Grove House Auxiliary. Check must be received no later than December 1, 1988.

NAME____________

ADDRESS____________

CITY________STATE________ZIP________

PHONE____________

Mail to: Tower Grove House,
P.O. Box 299, St. Louis, MO 63166

NEWS FROM SHAW ARBORETUM

Trustees Visit the Arboretum

Hiking the Pinetum Lake road, left to right: Peter Raven with Jules Campbell, Adelaide Schlafly and Susan Wolff; John Biggs with Daniel Schlafly; and Tamra Raven with Frank Wolff.

On October 1 members of the Board of Trustees and their families visited the Arboretum for a tour of the grounds and lunch at the Adlyne Freund Education Center. The visit included a bus tour of the trail house loop road to observe the Arboretum's rolling hills in beautiful fall color.

The Trustees had an opportunity to inspect several recent improvements to the Arboretum grounds, including a new parking area east of the Visitor Center. The new lot has space for 100 cars, and is not visible from the main part of the Pinetum lake area. The Trustees also observed the area formerly occupied by a number of obsolete greenhouses recently demolished by the Army National Guard. The greenhouse complex was built in the 1920s to house the Garden's orchid collection, when it was threatened by severe air pollution in the city.

Arboretum Closed during Deer Hunting Season

Although there will not be a managed deer hunt on the Arboretum this year, the Arboretum will be closed to visitors during deer firearms season, November 12 to November 20, as an added safety precaution. As usual, the four square miles of the Arboretum (2400 acres) will be patrolled during the hunting season.

PHOTOGRAPHY AWARDS—William Davit, staff naturalist at the Arboretum, was recognized for his superb photographs at the Eleventh North American Prairie Conference held at the University of Nebraska-Lincoln, last August. In a juried competition, two of Mr. Davit's photographs won their categories: "Prairie at Sunset" (Prairie Landscape) and "Sunflower at Sunrise" (Prairie Still Life). Mr. Davit's photographs appear frequently in the *Bulletin*.

Madagascar Program Receives Two-Year Grant

The Garden's research and conservation program in Madagascar has received a two-year grant of $250,000 from the W. Alton Jones Foundation, Inc. of Charlottesville, Virginia. The funding is effective through 1989.

The grant will allow assistant curator Dr. Porter P. Lowry II, project coordinator, and Dr. George E. Schatz, resident research botanist, to expand their efforts in research and exploration of Madagascar's extremely rich and highly threatened flora; establishment of a comprehensive computer database of the country's plant resources that will be used by scientists, conservationists and government organizations; and assistance and training for local botanists in modern botanical research methods. The grant also will allow the Garden to play a leading role in the growing international effort to conserve Madagascar's remaining areas of undisturbed forest.

National Geographic Society Funds Field Work In Amazonian Peru

Dr. Henk van der Werff, assistant curator at the Garden, has received a grant of $6,268 from the National Geographic Society to support his field study of the plant family Lauraceae. The grant will enable van der Werff to collect specimens around Iquitos in Amazonian Peru, an area rich in Lauraceae species.

From the Garden Gate Shop

Annual Holiday Preview Sale

Wednesday, Thursday, and Friday
December 2, 3, and 4
9 a.m. to 7:30 p.m.

Start your holiday shopping at the Garden Gate Shop's annual sale, where Members receive a 20 percent discount on all merchandise and plants. You will find something wonderful for everyone on your list in our huge selection of gifts, books, gardening tools, accessories, holiday plants and decorations. The Shop is featuring the beautiful 1989 Missouri Botanical Garden Calendar with photographs by Jack Jennings, and the popular 1988 Holiday Card, which shows a view of the Japanese Garden by Dhimitri Zonia. The card is available in sets of ten with no message, or with "Peace and Joy in the New Year" printed inside. Gift certificates are always available.

December Plant Sale

Thursday and Friday, December 8 and 9,
9 a.m. to 7:30 p.m.
Saturday, December 10, 9 a.m. to 5 p.m.

Brighten the holiday season with beautiful plants as gifts or decorations. The Shop will feature poinsettias, Christmas cactus, kalanchoe, and miniature decorated pine trees. Bulbs blooming for the holidays include amaryllis, paperwhites and hyacinths. A fine selection of baskets, birdfeeders, tools, and new and unusual gifts will be available. Members receive a 20 percent discount during the entire sale.

Trustee Profile

O. Sage Wightman III

A native of St. Louis, O. Sage Wightman III joined the Garden's Board of Trustees in 1983. Mr. Wightman recalls that his initial and quite thorough introduction to the Garden was organized by another Trustee, Robert R. Hermann, and Dr. Raven. "It was a fascinating experience and I was astounded to learn the extent of the programs in horticulture, research, and education that are a daily part of the Garden's activities.

"Working with the Trustees and Dr. Raven I have become much more aware of the impact of environmental concerns such as the destruction of the tropical rainforest. The Garden, through the exemplary leadership of Dr. Raven, is furthering a greater comprehension of this problem. Our community should be extremely proud of this institution. It is an incredible asset to the entire region."

As Chairman of the Henry Shaw Annual Giving Campaign, Mr. Wightman has been responsible for assisting the Garden in raising general operating support. "The Henry Shaw Campaign is an excellent way in which each individual can help the Garden by offering the financial support needed day-in and day-out to keep the Garden in the excellent condition we all expect and enjoy. The most gratifying part of the annual giving campaign is working with the volunteers who give of their time willingly and enthusiastically. They realize operating funds are critical if we expect the Garden to remain the premier institution it is today."

Mr. Wightman, who also serves as co-chairman of the individual gifts committee of the $16 million capital campaign, commented that it is exciting to witness the St. Louis community stepping forward to support this drive. Attracting the Kresge Foundation and many other new donors strengthens the credibility of our institution and the importance of this campaign.

For the past several years, Mr. Wightman has served as Corporate Vice President at Stifel Nicolaus. While he donates the greatest amount of his volunteer time to the Garden, Mr. Wightman also serves on the boards of the St. Louis Symphony, The Muny Opera, and the Central Institute for the Deaf.

Raven Receives Honorary Degree

Dr. Peter H. Raven, director of the Garden, received an honorary degree from the University of Massachusetts at Amherst on Thursday, October 13. The degree of Doctor of Science, *honoris causa*, was conferred during a special convocation that featured a lecture by Raven titled "The Next Twenty Years—Global Destruction of Biological Diversity: Can It Be Stopped?"

Each year the university grants honorary degrees to individuals of outstanding creative and intellectual achievement. Recent past recipients include Michael Dukakis, New York Governor Mario Cuomo, and Illinois Senator Paul Simon.

The University of Massachusetts at Amherst is the largest university, public or private, in New England. Founded in 1863 as a land grant college under the Morrill Act, it has grown from a small agricultural college into a major research university, containing 10 colleges with an enrollment of 19,750 undergraduate and 6,900 graduate students.

California Academy of Sciences Honors Raven

Garden director Dr. Peter H. Raven received the 1988 Fellows' Medal from the California Academy of Sciences on Tuesday, October 4. The Fellows' Medal is the Academy's highest award, and acknowledges Dr. Raven's contributions to the field of botany and, specifically, rainforest preservation. Dr. Raven has been associated with the Academy since the age of eight.

The 135-year-old Academy, located in San Francisco, serves as a research facility for scientists and an educational center for the public, with meetings, lectures, publications and exhibits. Its natural history museum and aquarium are popular Golden Gate Park tourist attractions.

Planned Giving Program Receives Grant

The Joyce Foundation of Chicago has made a grant to help the Garden provide planned giving services to its Members and friends. The Foundation's grant enabled the Garden to recruit Ernestina Short as a planned giving officer in the Development department. Ms. Short will be responsible for information and assistance to those who wish to consider a bequest or other forms of structured gifts. Marcia Kerz, director of development, said Ms. Short "will be available to talk with anyone who would like to explore the opportunities offered by our Planned Giving Program."

Planned Giving at the Garden includes the Heritage Society, founded in 1986, which includes Members and friends who have made provisions for the Garden in their wills. It is through generous and loyal participation of this kind that the Garden insures that its programs of display, research and education will continue to enrich the community.

Most recently, a member of the Heritage Society, Mrs. Robert R. Stephens, passed away, leaving a generous gift to the Garden in her will. Mrs. Stephens had contributed to the Japanese Garden and the Henry Shaw Fund for many years. She is survived by a niece, Mrs. O. Sage Wightman III.

We are grateful to Mrs. Stephens and members of the Heritage Society for their devotion to the Garden. For more information on the Planned Giving Program, call 577-5532, or write the Garden's Development Office, attention Ms. Short.

Cultural Institutions Play Vital Economic Role

The St. Louis Museums and Performing Arts Committee and the St. Louis Regional Commerce and Growth Association have announced the results of a survey that shows each public dollar spent in support of St. Louis cultural institutions generates $18 in local economic activity. In 1987, the institutions added $677 million and more than 21,000 jobs to the metropolitan St. Louis economy, and attracted 12.4 million visitors. The study included responses from 66 local cultural institutions, including the Garden.

The study concluded that "direct public-sector support of these institutions not only helps them provide first class cultural programs . . . it also helps make St. Louis a strong and more diversified economy."

For Younger Members

Holiday Plants

The winter season doesn't have blooming flowers like spring or full green trees like summer, but we can still use plants as a special part of the holiday season. Plants can add to our holiday sights, smells and tastes.

Try these activities and see if you agree that plants make the holidays brighter.

HOLIDAY SIGHTS / A Twig Tree

You will need:

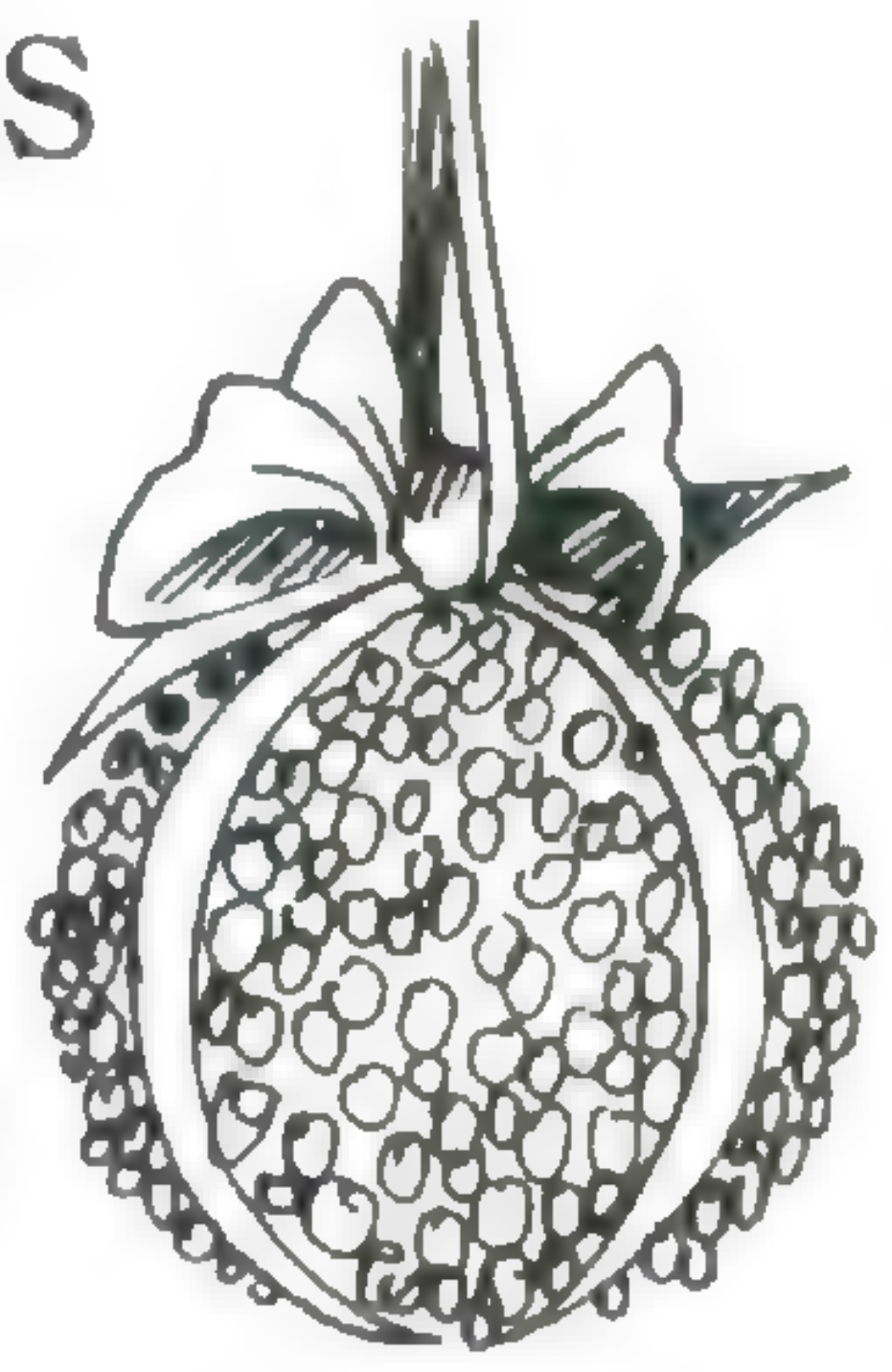
Colored paper
Yarn and fabric
A small tree branch
An empty jar or can
Sand

What to do:

Search your neighborhood for a small branch that has fallen from a tree. Strip it of all remaining leaves. Fill your jar or can with sand, and push the base of the branch into it. Once your tree is standing, you are ready to decorate it.

Use your imagination to make ornaments for your tree from brightly colored yarn, paper, felt, sequins, tin foil and other materials. If you can find some small pine cones on the ground, paint them or dip them in glue and glitter, and let them dry. Tie a piece of thread about 12 inches long to each ornament and use the thread to fasten the decorations to your tree. Use your tree as a table centerpiece or to decorate your room.

HOLIDAY SCENTS / Pomander Balls



Plants are known for their wonderful scents. An orange pomander ball will add a festive fragrance to your house.

You will need:

One box of whole cloves
One orange
Thin fabric ribbon
Sewing pins

What to do:

Tie the ribbon around your orange. Use the pins to hold it in place. Make a fancy bow on the top.

Push a clove (stem first) into your orange, leaving the head of the clove above the orange's skin. Cover the entire orange with cloves. Slip another length of ribbon under the bow, tie the ends together, and hang your pomander ball in a warm dry place. It will give off a delightful scent for at least a week.

HOLIDAY TASTES / Granola Balls

No celebration would be complete without eating a few delicious treats. Below is recipe that makes good use of several plants. See if you can identify all the plants you will be eating.

You will need:

2 tablespoons softened peanut butter
¼ cup honey
1 tablespoon water
1 cup finely chopped apricots or raisins
2 cups crispy cereal or granola

What to do:

Combine peanut butter, honey, and water. Add fruit and granola, and blend well. Moisten your hands with cold water, and shape the mixture into one-inch balls. Roll in additional crushed granola if desired. Store on waxed paper in the refrigerator.

Henry Shaw Academy Explorers Study In Jamaica

Last June a group of seven local high school students participated in a week-long field trip to the Hofstra University Marine Lab in Jamaica. The students were Fred Arndt, Kim Barnes, Maria Ce-Ballos, Missey Livesay, Buffy Nieman, Bill Peacock and Liessa Thomas. They were supervised by Jeff DePew, a member of the Garden's education division and coordinator of the Henry Shaw Academy. Jeff was assisted by Barbara Addelson, of the education division's ECO-ACT program, and Henry Shaw Academy assistant Tracey Betz.

The Explorers combined fun and learning as they studied marine ecology and tropical biology, including snorkeling among coral reefs, night excursions to tidal pools, hikes along the shore, and studying Jamaica's culture and history.

The Caribbean trip was the culmination of the first year of the new Explorer program, which began in September, 1987. The program offers a full year's credit in high school elective biology to students who attend the monthly sessions and satisfactorily complete independent field projects and journals. Those students who also demonstrate outstanding skills in leadership and field research are eligible for summer field trips.

The Explorer program is for 14 to 18 year-old students who already have a background in general science or biology. It uses field research methods to study the diversity of the earth's ecosystems. Explorer members have monthly weekend sessions and take field trips to such locations as Missouri caves, state parks, the Smoky Mountains and the Arboretum.

The program runs from September through August and is limited to 15 participants. Openings may be available for the rest of the current school year; call 577-5135 for information. Fees vary for each activity, and some scholarship money may be available.

The Henry Shaw Academy

The Henry Shaw Academy offers students aged seven and older exciting ways to investigate topics in science, ecology and natural history. A membership in the Academy is $15 per year, and includes newsletters, a membership card, invitations to special events and an Academy T-shirt. For a complete brochure on current HSA classes and activities, call 577-5140.

NISSAN MOTOR CORPORATION IN U.S.A.: Director and Regional General Manager Thomas Eastwood (right) and William Alexander, Regional Sales Manager (left) presenting a check to Deborah Graham, the Garden's public events coordinator, in support of special events as part of the Japanese Festival.

To Be Given Away By....
ST. LOUIS NISSAN
DEALERS ASSOCIATION
BOMMARITO NISSAN
CAR CITY NISSAN
DE BRECHT NISSAN
GENE FUSE NISSAN
LOU FUSE NISSAN
SOUTHLAND IMPORTS
COUNTRYWAY NISSAN
TRI-CITY NISSAN

LOCAL SUPPORT: Ed DeBrecht, (right), President of the St. Louis Nissan Dealers Association, and Peter H. Raven announce the winner of a 1988 Nissan Pulsar Coupe. The winner's name, Brenda Baum of St. Louis, was drawn from thousands of entries submitted by visitors to the Garden's recent Japanese Festival.

Tributes

JULY - AUGUST 1988

In Honor Of:

Mr. and Mrs. Gerald Abels
Mr. and Mrs. Charles J. Cook

Mr. and Mrs. Leonard Adreon
Mr. and Mrs. Phillip Schreiber

John Binder
Mr. and Mrs. Herbert M. Talcoff

Mrs. Helen Bland
Mae Anderson
Alice Granneman
Cleo Metz
Irene Vogt
Nita Yewell

Mrs. Florence Block
Mr. and Mrs. Arnold Goldman

Dr. Eugene M. Bricker
Dr. and Mrs. Llewellyn Sale, Jr.

Howard Cloud, Jr.
Joy Allard
Mr. and Mrs. Bill Eastman
Mr. and Mrs. Brant Garnholz

Dr. and Mrs. Paul Cornelius
Mrs. Margaret Hurwitz

Mr. Jerry Crowley
Mr. and Mrs. A. F. Boettcher, Jr.

Mrs. Ellen Dubinsky
Mr. and Mrs. Burton E. Follman
Mr. and Mrs. Alan P. Goldberg

Melville Dunkelman
Dr. and Mrs. Llewellyn Sale, Jr.

Mr. and Mrs. Harry Fabick
Mr. and Mrs. Robert P. Elsperman

Dr. and Mrs. James B. Finn
Mr. and Mrs. Christopher K. Reid

Mr. and Mrs. Clifford E. Fischer
Mr. and Mrs. Joe C. Zingrich

Mrs. Carol Fruend
Mrs. Helen D. Glassberg
Mr. Myron Glassberg
Mrs. Peggy Graves

Mrs. Doris Grattendick
Cordie Schmid

Mrs. Ernest Hommel
Soule Family

Mrs. Doris Kaplan
Mr. and Mrs. Victor Packman

Kevin Koplar
Mr. and Mrs. Henry W. Dubinsky

Mr. Robert Kresko
Mr. Louis M. Schukar

Ms. Marge May
Mr. and Mrs. Myron Glassberg

Louise Robinson McReynolds
Susan McReynolds Bonnell
Ann McReynolds Edwards
Ann Robinson Faulk
Thomas R. McReynolds
James E. Robinson
John R. Robinson
Orrin S. Robinson
William S. Robinson
Louise Gervais Sherrill
Clarice Robinson Woodley

Jim and Libbie Neuner
Mr. and Mrs. Macy S. Abrams

Mr. and Mrs. Marvin N. Parsons
Mr. and Mrs. Ralph Hermon

Dr. and Mrs. John Radke
Ms. C. Janelle Evans

Mr. and Mrs. T. Rosen
Mr. and Mrs. Myron Glassberg

Mrs. Alan Ross
Mrs. Melvin Feist

Mrs. Sammy Ann Ruwitch
Mr. and Mrs. Charles J. Cook

Mrs. Arthur Scharff, Jr.
Mr. and Mrs. Richard L. Bushman

Dr. Alfred Schwartz
Dr. and Mrs. Hyman R. Senturia

Mrs. Alma Shoenberg
Dr. and Mrs. Llewellyn Sale, Jr.

Mrs. Sophie Sigoloff
Mrs. Victor Packman

Mr. and Mrs. Walter Stern
Dr. and Mrs. Ira Kodner
Dr. and Mrs. Gunter Schmidt

Mrs. Marjorie Maddox Tooker
Mr. William Pagenstecher

Mrs. Gean Toothacker
Mrs. Edward L. Martin

Mrs. Robert Tschudy
Mr. and Mrs. Henry W. Dubinsky

Mr. Buddy Turner
Mr. and Mrs. Frank Prins, Jr.

Mr. and Mrs. Burt Wenneker
Mr. and Mrs. Stanley M. Lewis

The following gifts were made to the Campaign for the Garden, in honor of Mr. and Mrs. Woodcock's 50th wedding anniversary. These donors were inadvertently omitted from the list published in the last issue of the Bulletin. *We regret the error.*

Mr. and Mrs. Lyle Woodcock
Mrs. Georgia Adams
Mr. and Mrs. James Arensman
Miss Ola M. Eubanks
Miss Rose Evertz
Mrs. Frances E. Felts
Mr. and Mrs. Dennis Ford
Mr. and Mrs. Earl L. Freiermuth
Mr. and Mrs. Oscar Gergs
Dr. and Mrs. Robert R. Hartman
Mrs. Katherine E. Herzog
Mr. Fielding Lewis Holmes
Mr. and Mrs. Ray Johnson
Mrs. Edith Mattick
Mr. and Mrs. C. F. McClure, Jr.
Mr. and Mrs. Thomas McClure
Mr. and Mrs. William T. McClure
Mr. and Mrs. Henry Meier
Mr. and Mrs. Kenneth Meyer
Mr. and Mrs. Noble Parsonage
Grace Rippy
Mr. and Mrs. Harold Short
Mr. and Mrs. Charles Stough

In Memory Of:

Mr. Earnest Albrecht
Mr. and Mrs. Harold W. Bonacker
Mr. and Mrs. Matt Duenke

Mr. Gustaf Andersen
Mr. George R. Durnell

Mrs. Hugh M. Anderson
Sarah and Joan Moss

Mr. Arthur Ballard
Mr. Thomas Sehr

Mr. William Bernoudy
Mr. and Mrs. Howard F. Baer
Mrs. Jean-Jacques Carnal
Mr. and Mrs. Ernest A. Eddy, Jr.
Mrs. Martha N. Simmons
Mr. and Mrs. Robert B. Smith

Mrs. Ira E. Berry
Mr. and Mrs. Tom S. Eakin, Jr.
Mr. and Mrs. Elmer G. Kiefer
The Whitehall Club, Inc.

Mr. Ed Biernbaum
Dr. and Mrs. Gregory Storch

Mrs. Harriet Bischoff
Mrs. Richard S. Bull
Mr. and Mrs. John G. Goessling
Miss Wendy Goessling
Mrs. Martha N. Simmons

Mrs. Edward Bishop
Mr. and Mrs. Charles W. Freeman

Mr. Olaf Boettcher
Mr. and Mrs. Ferd L. Bopp
Mrs. Arlene Richter
Mr. and Mrs. William D. Walton

Mr. Maurice S. Bonnett
Mr. and Mrs. Burt Wenneker

continued on next page

Tributes

continued

Mr. Stephen F. Bowen, Sr.
Mr. and Mrs. Rudyard K. Rapp
Mr. and Mrs. Robert P. Tschudy

Mr. Herman Bowmar
Mrs. Herman Bowmar

Miss Muriel Braeutigam
Miss Helen A. Mardorf

Mrs. Elzora Branch
Mr. and Mrs. Robert J. Trulaske

Mrs. Altha Brandt
Mrs. Ernest D. Loewenwarter

Mrs. Ethel Brightman
Dr. and Mrs. Thomas A. Woolsey

Mrs. Pearl Chazen
Mr. and Mrs. Burt Wenneker

Nana Phelan Gildehaus Cisco
Mr. and Mrs. Ralph E. Piper

Mr. Robert McNeely Cochran
Mrs. Esther C. Bitting
Mr. and Mrs. Robert R. Cave
Mr. and Mrs. Alexander Cornwell, Jr.
Mr. and Mrs. Charles W. Freeman
Mr. and Mrs. John G. Goessling
Mrs. John F. Krey
Mr. and Mrs. Robert B. Smith
The Charless Home, Board of Directors

Rev. Ford Coffman
Mr. and Mrs. John B. Henkle

Mr. Herbert D. Condie, Jr.
Mr. and Mrs. J. J. Brouk

Mr. Fred Couts, Sr.
Jim Moore
Fred J. Rock

Mrs. Eugene Cronk
Mr. and Mrs. John Gardner
Mr. Clark V. Graves

Mother of Irnell Daniel
Mrs. Kaye Mayer

Mr. Vincent D'Antoni
Mr. Earl Rosen, Jr.

Dr. M. A. Diehr
Mrs. Emma Kruse

Mr. William D. Errant
Mrs. James Butler Bushyhead
Mr. and Mrs. Myron Glassberg
Mr. and Mrs. Richard Halpern
Mr. and Mrs. Jerome M. Steiner

Mrs. H. L. Ettman, Jr.
Miss Mercedes E. Nitzschmann

Mr. Casper Fabick
Mr. H. James Hoeferlin
Mr. Lee Kirk

Mr. Gus Fakonas
Mr. and Mrs. Andrew Cassimatis

Mrs. Farmer
Mr. and Mrs. Robert Rains

Mr. Paul A. Fiehler, Sr.
Mr. Dale L. Boring

Ina Fitzgerald
Mr. and Mrs. Robert Appleton

Mr. Edwin D. Franey
Mr. and Mrs. Peter H. Husch

Carl Garfinkel
Mrs. Margaret J. Faiman and Family

Mrs. Erna Georgenitch
Mr. and Mrs. Robert P. Green

Mrs. Alma Giebel
Mr. and Mrs. Harold W. Bonacker
Mr. and Mrs. Daniel H. Goetz
Mr. and Mrs. Albert C. Moyer

Mr. Alan Godlewski
Miss Adelaide Cherbonnier
Mr. and Mrs. William T. Dooley, Jr.
Dr. Patrick Flanagan
Dr. and Mrs. J. M. Grant

Mrs. Bessie Govits
Rose Society of Greater St. Louis

Mrs. Lora Graul
Dr. and Mrs. Joseph A. Roy

Mrs. Etta Gudehus
Mr. and Mrs. Philip M. Craig

Mr. Harry Hammett
Mr. and Mrs. Elmer G. Kiefer

Mrs. Elaine Hartmann
Helen Boemler

Mr. George Hasser, Sr.
Mr. and Mrs. Robert Rains
Dr. and Mrs. Peter H. Raven

Mrs. Katherine H. Hedley
Mrs. Betsy H. O'Herin
Mr. Edwin A. Paradoski

Mrs. Robert Holdenried
Mr. and Mrs. Russell Moll

Mrs. Bernice Hougland
Early Education Center, Staff and Board
Mr. and Mrs. Newton C. Garland
Ms. Debra Hagen
Mr. and Mrs. Ken House
Mr. and Mrs. Robert A. Jackson
Mr. and Mrs. Roger N. Jespersen
Ms. Katherine Kravitz
Ozark Area Council
Wesley Foundation

Col. Daniel H. Hundley
Mrs. Pamela Willhite Finch

Mrs. A. Clifford Jones
Mr. and Mrs. Andrew H. Baur
Mr. and Mrs. Henry Belz III
Mr. and Mrs. J. J. Brouk
Mrs. Richard S. Bull
Mr. and Mrs. William H. T. Bush
Mr. and Mrs. Hugh Cannon
Mr. and Mrs. Robert R. Cave
Mr. and Mrs. Alexander Cornwell, Jr.
Mr. and Mrs. Donald Danforth, Jr.
Mrs. John L. Donnell
Mr. and Mrs. William T. Dooley, Jr.
Mr. and Mrs. Charles W. Freeman
Mr. and Mrs. John Gardner
Mr. and Mrs. Richard S. Hawes III
High Hopes Syndicate
Mr. and Mrs. Henry Hitchcock
Mr. and Mrs. George K. Hoblitzelle
Mrs. Foster W. Holmes
Mr. and Mrs. Gale F. Johnston, Jr.
Mr. and Mrs. Albert D. Krueger
Ladue Garden Club
Mr. and Mrs. Charles F. Limberg
Mr. and Mrs. L. Max Lippman, Jr.
Mr. and Mrs. Roger E. Lord, Jr.
Mr. and Mrs. Albert Michenfelder
Mr. and Mrs. Thomas R. Remington
Mr. and Mrs. John D. Schaperkotter
Judy Scott
Mr. and Mrs. Robert L. Sharp
Dr. Suzanne H. Singer
Mr. and Mrs. H. Parker Smith
Mr. and Mrs. Robert B. Smith
Mr. and Mrs. Tom K. Smith, Jr.
Mr. and Mrs. Edmonstone F. Thompson
Mr. and Mrs. John K. Wallace, Jr.
Mr. and Mrs. Thomas W. White IV
Mr. and Mrs. George P. Whitelaw, Jr.
Mr. Harry Wuertenbaecher, Jr.

Ann Mueller Jones
Robert D. Mudd Family

Helen and John Joynt
Mr. and Mrs. Arthur F. Boettcher, Jr.

Keith Katzer
Missouri Botanical Garden—Guides
Missouri Botanical Garden—Volunteer Instructors

Mrs. Anna Kiefer
Mr. and Mrs. Robert D. Till

Jane Linson Kraemer
Roussin Family

Mr. Mike Kutner
Mr. and Mrs. Leonard Kantor

Mrs. Goldie Pankewer Levine
Mr. and Mrs. Jere Hochman

Mrs. John F. Lilly
Mr. and Mrs. Henry O. Johnston

Mrs. Genevieve Linn
Mr. and Mrs. Edward J. Crawford

Mrs. Anne Chase Lionberger
Anne Rose Stewart

Mr. Michael Longo
Mr. and Mrs. Robert D. Rich

Mr. Harry Lydick
Mr. and Mrs. Dick Archer

Mr. Ralph Marotta
Rose Society of Greater St. Louis

Dr. Richard W. Maxwell
Mrs. D. W. Eades
Mr. and Mrs. Frank G. Kirtz

Mrs. Bernice McClanahan
Mrs. Peggy Wann

Mr. Harold E. McDonald
Betty Endicott
Scott Endicott
Buzz and Susan McDonald
Joe and Susan McDonald
Michael and Penny McDonald
Virginia McDonald
Mary and Mike Palazzola
Karen and Buzz Phillips
Pat and Lindsay Poettgen

Mr. William J. Meisburger, Jr.
Miss Marion Bock

Mr. Daniel P. Meyers
Mr. and Mrs. Eugene W. Dependahl

Mr. Robert Mignerone
Mr. and Mrs. John B. Henkle

Mr. Thomas Roberts Miller
Mr. R. J. Sauget
Donald Clark Ward

Mr. Stephen V. Monte, Sr.
Mr. and Mrs. Henry W. Dubinsky
William R. Gould Family
Mr. and Mrs. Robert P. Tschudy

Mr. Hubert Moog
Mr. and Mrs. Lester R. Adelson

Mrs. Sybil Morris
Mr. and Mrs. Charles J. Cook

Mrs. Stanley Morse
Mr. and Mrs. Nicholas P. Veeder

Mrs. Mary A. Myles
Mr. and Mrs. Frank E. Vigus

Mr. George Arthur Neff IV
Diane, Paul and Alex Redman

Ruth Neidt
Mrs. S. A. Weintraub

Mrs. Dolores Nelson
Mrs. Maurine L. Baldwin
Joni L. Boldt
Terry Brown
Mr. and Mrs. Eugene Camden
Mr. Mike Campbell
Ms. Lynn E. Condit
Mr. and Mrs. William T. Devers
Mr. and Mrs. Marvin C. Duba
Fred W. Fangmann Family
Mr. and Mrs. Maurine Flenniken
Mr. Jerry Gawrys—Best Printing & Duplicating, Inc.
Mr. and Mrs. Gordon Gundaker
Mr. Lester O. Haas
Mrs. Vivian J. Haas
Mr. and Mrs. Philip E. Johnson
Mr. and Mrs. Jack Kerls
Mrs. Judith A. Kusnierkiewicz
Maritz, Inc.—Market Research
Lynn McCloskey
Miss Christine M. Nelson
Mr. and Mrs. Vernon F. Petrik
Renaissance Society of Maplewood
St. Louis Magazine, Inc.
The Schoeningers
Stephen Stalley
Mrs. Esther M. Steinberger
Steve Taylor Family
Mr. Robert H. Wagner
Mr. and Mrs. Stanley M. Wilensky
Don and Nancy Williams

John S. Nicholson
Margaret Faiman and Family

Mr. Walter J. Nutt
Satsuko Doi
Toshi Doi

Mr. John Passiglia
Ms. Barb Franz
Ms. Nancy M. Franz
Mr. Steve Lukowski

Mrs. Lena Peltier
Mr. and Mrs. Burt Wenneker

Susan Pepple
Mr. and Mrs. Jack Herrmann
Ms. Carrie Milanovits-Launius

Mrs. Mary Bowman Peters
Mr. and Mrs. William A. Frank, Jr.
Mr. and Mrs. Thomas W. White IV

Mr. Petrovik
Mr. and Mrs. William E. Remmert

Mrs. Ione Pilkington
Mr. and Mrs. William A. Frank

Mrs. Stuart T. Plimpton
Mrs. Clinton U. Imboden
Missouri Botanical Garden—Guides
Dr. and Mrs. M. Bryant Thompson

Mr. Alexander Timon Primm III
A. G. Edwards & Sons, Inc.
Donald W. Anthon Family
Mr. and Mrs. Frederick H. Atwood III
Mrs. Elizabeth Augustine
Mrs. Lewis W. Baldwin, Jr.
Mr. and Mrs. Andrew N. Baur
Dr. and Mrs. Vilray P. Blair, Jr.
Mrs. Gaylord C. Burke
Mr. and Mrs. William H. T. Bush
Mr. Jules D. Campbell
Mr. and Mrs. J. J. Landers Carnal

Mr. and Mrs. Robert R. Cave
Mr. and Mrs. James D. Cherry
Mr. and Mrs. Thomas R. Collins, Jr.
Mr. and Mrs. John Walton Curley
Mrs. Jane M. DeSmedt
Mrs. Arthur A. Dunn, Jr.
Mr. and Mrs. Ernest A. Eddy, Jr.
Mrs. H. M. Engelhorn
Mr. and Mrs. William A. Frank
Friends' Meeting of Rolla
Mr. and Mrs. J. Carr Gamble, Jr.
Mr. and Mrs. George H. Hall
Mr. and Mrs. Philip Hall
Mr. and Mrs. Everett R. Hamilton
Miss Mary Frances Hazelton
Dr. Ilse Heilbrunn
Mr. and Mrs. Downing B. Jenks
Ms. Hope D. Jones
Mr. John A. Karel
Mr. and Mrs. William B. Kempton
Mr. and Mrs. Robert E. Kresko
Mr. and Mrs. Charles F. Limberg
Mrs. Robert McCarthy
Dr. and Mrs. James F. Nickel
Mrs. Lucianna Gladney Ross
Mr. and Mrs. A. Lee Shapleigh II
Mrs. A. Wessel Shapleigh
Mr. and Mrs. Jackson J. Shinkle
Mr. and Mrs. James A. Singer
Mr. and Mrs. H. Parker Smith
Mr. and Mrs. Robert B. Smith
Mr. and Mrs. Tom K. Smith, Jr.
Mr. and Mrs. C. C. Johnson Spink
Ms. Amy Hamilton Stewart
Mrs. Anne L. Stewart
Mrs. Arthur Stockstrom
Mr. Arthur Stockstrom, Jr.
The Charless Home—Board of Directors
Mr. and Mrs. Michael C. Vander Velde
Mr. and Mrs. John S. Wagner
Mr. and Mrs. John K. Wallace, Jr.
Mr. and Mrs. Edward D. Weakley
Mr. and Mrs. George P. Whitelaw, Jr.
Mr. and Mrs. Douglas Wixson
Dr. and Mrs. Thomas A. Woolsey

Mr. E. Harold Qualls
Mr. and Mrs. Erwin R. Breihan

Mrs. Terry Reynolds
Dr. and Mrs. Richard Wunderlich

Mrs. Vera Riley
Miss Peggy Keilholz

Liz Rinehart
Mr. and Mrs. Dean Danzer

Mr. Chris Rojewski
Mr. and Mrs. Charles F. Herwig, Jr.

Mrs. Thelma Routt
Mr. and Mrs. Andrew J. Kocot

Mr. Fred Russell
LaBarge, Clancy & Riske

Mr. George Scherrer
Mrs. Marion Ladd

Mr. George Brett Schneider
St. Louis Horticultural Society

Mr. A. Wessel Shapleigh, Jr.
Mrs. Esther C. Bitting
Mr. and Mrs. Ernest A. Eddy, Jr.
Sen. A. Clifford Jones
Mrs. John K. Lilly
Mr. and Mrs. Robert B. Smith
Mr. and Mrs. George P. Whitelaw, Jr.

Mr. William Sisson
L. Marie Fears

Mr. Chester P. Skwiot
Mr. J. B. Andrews, Jr.
Mr. and Mrs. Frank V. Becklean, Jr.
Ms. Judith L. Canoy
Charles L. Crane Agency Company
Mr. and Mrs. Robert J. Daley
Mr. Kenneth R. Diel
Donco Construction Inc.
Mrs. Myrtle S. Euler
Mr. and Mrs. William Gorman
Ms. Judith Griffin
Judy A. Horbelt
Mrs. Jean Kautzman
Mr. and Mrs. Rhoderick W. Key
Margaret L'Ecuyer
Mr. and Mrs. D. McClain
Wm. H. McGee & Co., Inc.
Mr. and Mrs. Donald Niemeier
Mr. Dennis O'Brien
Mr. and Mrs. John Risberg
Mr. and Mrs. J. Shepard
Mr. and Mrs. Willis F. Shepard
Mrs. Chester P. Skwiot
Ms. Joanna M. Skwiot
Mr. John E. Skwiot
Walter Talley Family
Mr. and Mrs. Dave Thompson

Mrs. Viola Smalley
Mr. and Mrs. Anton M. Kochan

Mr. Marion Leonard Smith
Ms. Marie Nemnich

Mr. and Mrs. George R. Staten
Mr. John W. Minton, Jr.

Mrs. Fannye Stern
Mr. and Mrs. Harvey Shapiro
Mr. and Mrs. Herbert M. Talcoff

Mrs. Luevenia Casey Stewart
Mr. and Mrs. John H. Ward

Edmonstone F. Thompson, Jr.
Mr. and Mrs. P. Taylor Bryan III
Mr. and Mrs. John G. Goessling

Mr. Joseph H. Venegoni, Sr.
Ms. Deborrah Daher Paradowski

Mr. Vincent Vento
Mr. and Mrs. Clyde P. Orr

Mrs. Dorothy Watro
Mr. John R. Overall

Mrs. E. H. Wavering
Mrs. P. J. Rapp

Mrs. Gerhard Weber
Rose Society of Greater St. Louis
St. Louis Horticultural Society

Mrs. L. B. Weber
Mrs. Ralph F. D'Oench

Dr. Leslie F. Weber
Mrs. Leslie F. Weber and Family

Mr. Sidney F. Weller
Mr. and Mrs. Joseph J. Gazzoli

Mr. and Mrs. John Wenzel
John Butler Family
Mrs. Sarah W. Clark
Ms. Jayne A. Helmig
Mr. and Mrs. Steven C. Johnson
Mr. and Mrs. Bob Kloster
Mr. and Mrs. Robert Musselman, Jr.
John T. Parisi Family
Mr. and Mrs. J. B. Spector
Richard A. Tate Family

Mrs. Rose Werner
Miss Karen Ashton

Mrs. Anna Wiesbecher
Mrs. Dorothy R. Polowick

Mrs. Carol Winkelmeyer
Mr. and Mrs. Joseph L. Krechel

Margaret and Archie Wise
Margaret J. Faiman and Family

Mr. Reinhard Wobus
Mr. and Mrs. David F. Orwig
Ms. Elaine N. Toelle

Susan Wolf
Mr. and Mrs. Michael J. Lackey

Mrs. Betty J. Woodward
Mr. and Mrs. Ernest A. Eddy, Jr.
Mrs. Herbert C. Phillips

Mrs. Rosemary Zander
Yvonne Askew
Stan Bailey
Dennis and Michelle Biddy
Kent Boncek
Don and Pam Borgmeyer
Dave and Carolyn Broach
Carl and Vicki Brooks
Dale and Sheryl Brown
Robert Burton
Lloyd Butler
Larry and Patty Campbell
Don and Marge Cloninger
Marcia Daab
Bob Dickenson
L. Englehardt
Robert Eriesacher
Bill and Dee Farris
Billy and Patricia Flahart
Pete Fleis
Thomas Golshahr
Rick Gruebbel
Kenneth and Bernice Halbrook
A. O. Harris
Larry Hodges
Ray Holthausen
Virgil and Carol Huber
Terry and Debby Hutton
Julie and Mike Jordan
Dave Julian
Steve Kamer
Jerry and Carol Keilholz
Daniel King
Bob Kirk
Joseph R. Kitson
John and Debbie Kramer
Glenn and Mary Longhibler
Charles Lycans
Douglas Main
Jerry and Terry Mayo
Tim Meyers
Doak and Brenda Mitchell
JoAnn Montgomery
Russ and Hazel Moore
Richard and Alyce Muehlhauser
Joseph Naggi
Howard Neal
Thomas and Ruth Newman
Jack Nuckolls
Charles Pfeil
Jim Prasuhn
Robert Ramaesiri
James Reichardt
Dan and Mary Schmidt
Scott Sieveking
R. Stange
Ray and Karen Stetina
Dave and Kathy Stokes
Burl Thomas
Tom Trayley
Glenn and Sally Woodard
Donald Woodward
R. Zintel

Mr. Fred Ziemann
Mr. H. James Hoeferlin

Mr. Tom Zotos
Mr. and Mrs. Andrew Cassimatis

Board of Trustees

Mr. John H. Biggs
President
Mr. Joseph H. Bascom
Rev. Lawrence Biondi, S.J.
Mr. Gerald D. Blatherwick
Mr. Stephen F. Brauer
Mr. William H. T. Bush
Mr. Jules D. Campbell
Dr. William H. Danforth
Mr. Robert R. Hermann
Rt. Rev. William A. Jones, Jr.
Mr. David W. Kemper
Mr. Charles F. Knight
Mr. Robert E. Kresko
Mr. William E. Maritz
Mr. James S. McDonnell III
Mr. Lucius B. Morse III
Mrs. Fred A. Oberheide
Mr. William R. Orthwein, Jr.
Mrs. Vernon W. Piper
Mrs. Lucianna Gladney Ross
Dr. Howard A. Schneiderman
The Hon. Vincent C. Schoemehl, Jr.
Mr. Sydney M. Shoenberg, Jr.
Mr. C. C. Johnson Spink
Mrs. Walter G. Stern
Dr. Joyce M. Thomas
Mr. John K. Wallace, Jr.
Mr. O. Sage Wightman III

EMERITUS TRUSTEES
Mr. Howard F. Baer
Mr. Clarence C. Barksdale
Mr. Sam'l C. Davis
Dr. Thomas S. Hall
Mr. Henry Hitchcock
Mrs. Anne L. Lehmann
Mr. Joseph F. Ruwitch
Mr. Louis S. Sachs
Mr. Daniel L. Schlafly
Mr. Warren M. Shapleigh
Mr. Robert Brookings Smith
Mr. Tom K. Smith, Jr.
Mrs. Harriet Spoehrer
Mr. Harry E. Wuertenbaecher, Jr.

MEMBERS' BOARD
Mrs. Henry W. Dubinsky
President
Mrs. Rudyard K. Rapp
First vice president
Ms. Elaine A. Alexander
Second vice president
Mrs. Robert P. Elsperman
Secretary
Mr. Frederick H. Atwood III
Treasurer

DIRECTOR
Dr. Peter H. Raven

HOLIDAY FANTASY

The holidays are a special time at the Garden, and this year marks the return of our popular holiday flower show in Orthwein Floral Display Hall. Lavishly decorated with poinsettias, the show creates a whimsical wonderland of holiday delights, including a gingerbread house, Santa's sleigh, a Nutcracker, candyland, and a variety of animated figures.

Join us for a very special preview party on Thursday evening, December 8, for Members only, sponsored by The Daniel and Henry Co. Watch your mail for details.

Don't miss any of the exciting holiday events at the Garden!
See Calendar of Events, *pages 14-15.*

MISSOURI BOTANICAL GARDEN BULLETIN (ISSN-0026-6507)
P.O. Box 299
Saint Louis, Missouri 63166

SECOND CLASS
POSTAGE
PAID
AT ST. LOUIS, MO